

Appendix C

Metal Dusting of Heat-Resistant Alloys

Addendum to Chapters 2,5,6,7 & 8

Abdulaziz I. Al-Meshari
Hughes Hall, Cambridge

University of Cambridge
Department of Materials Science and Metallurgy

A supplementary material to the dissertation entitled
“Metal Dusting of Heat-Resistant Alloys”
October, 2008

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1 Introduction

This appendix must be read in conjunction with chapters 2, 5, 6, 7, and 8. Charts of temperature profiling and furnace heating and cooling are given. Details of weight change calculations as well as XRD and EDX charts are also included.

2 Temperature Profiling

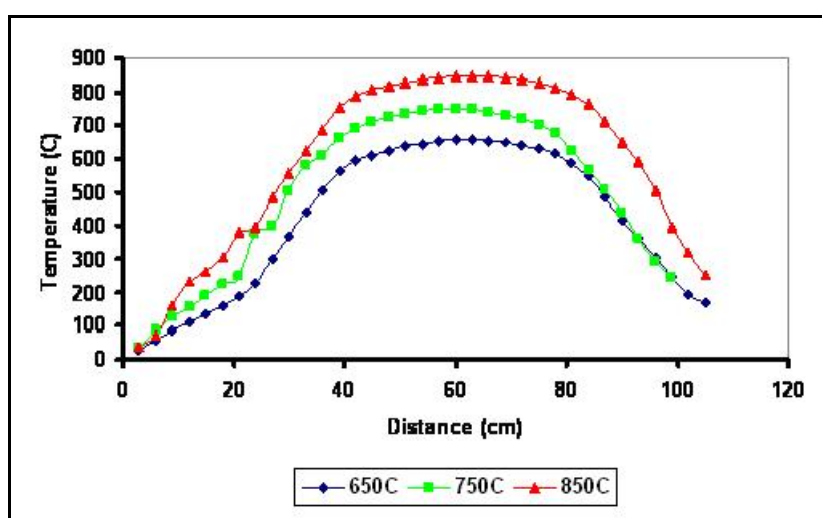


Figure 2.1 Temperature profile of the furnace at 650, 750, and 850°C.

3 Furnace Heating and Cooling

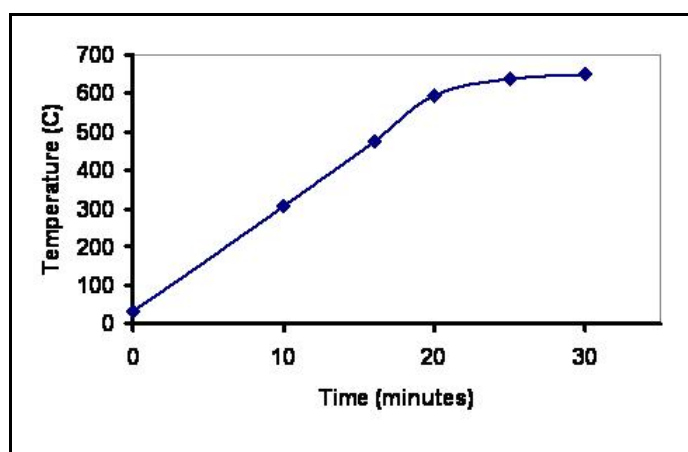


Figure 3.1 Heating to 650°C.

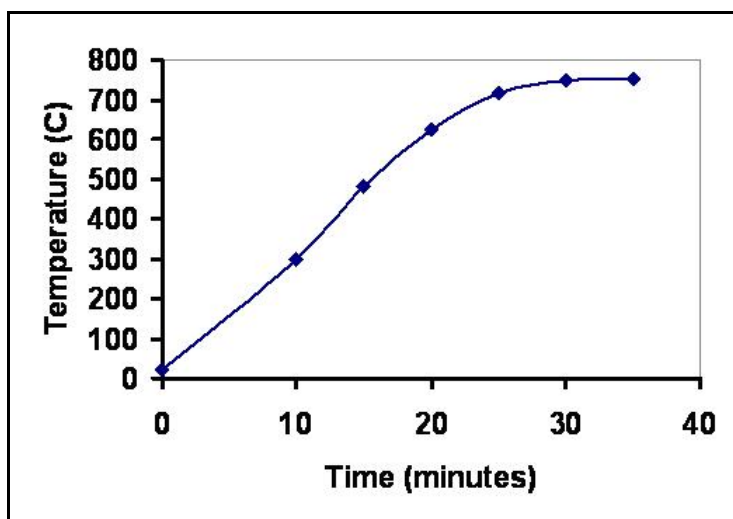


Figure 3.2 Heating to 750°C.

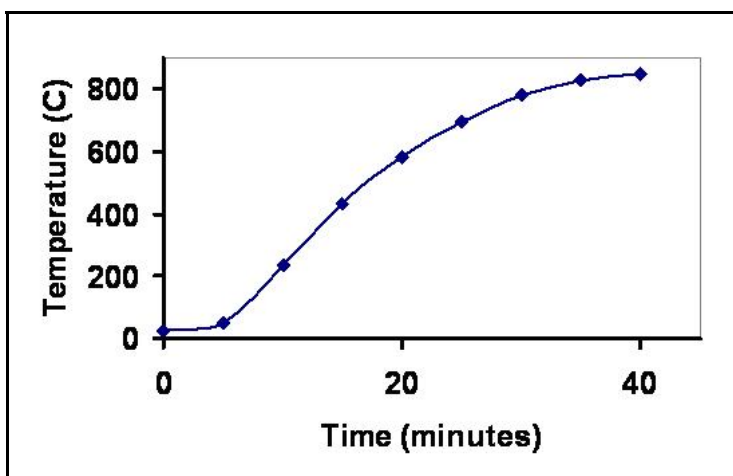


Figure 3.3 Heating to 850°C.

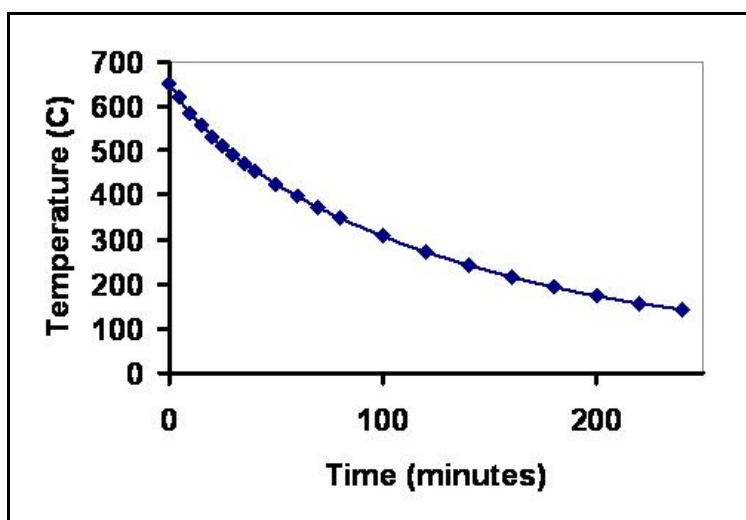


Figure 3.4 Cooling from 650°C.

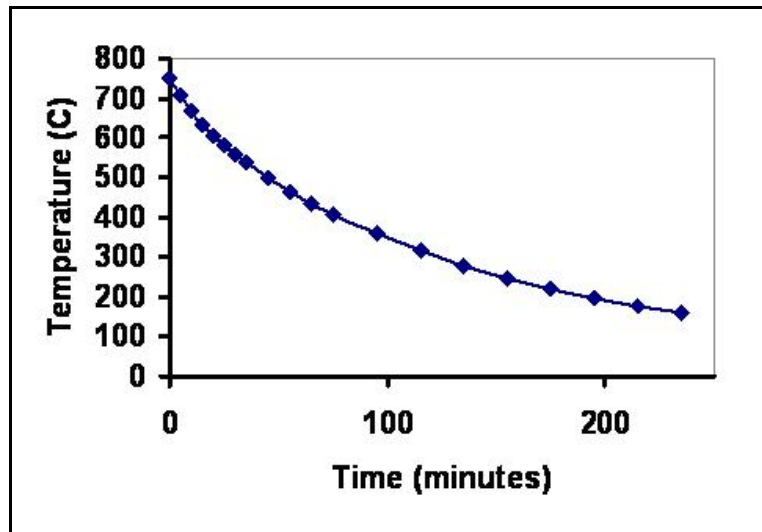


Figure 3.5 Cooling from 750°C.

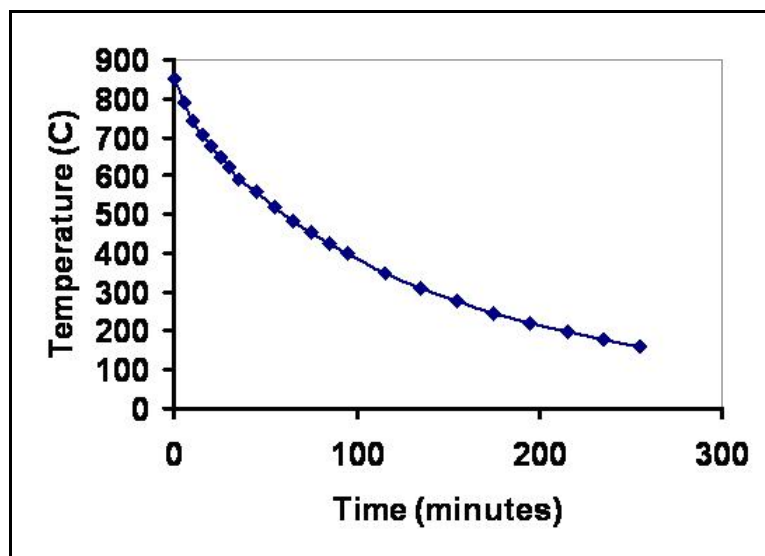


Figure 3.6 Cooling from 850°C.

4. Alloy HP

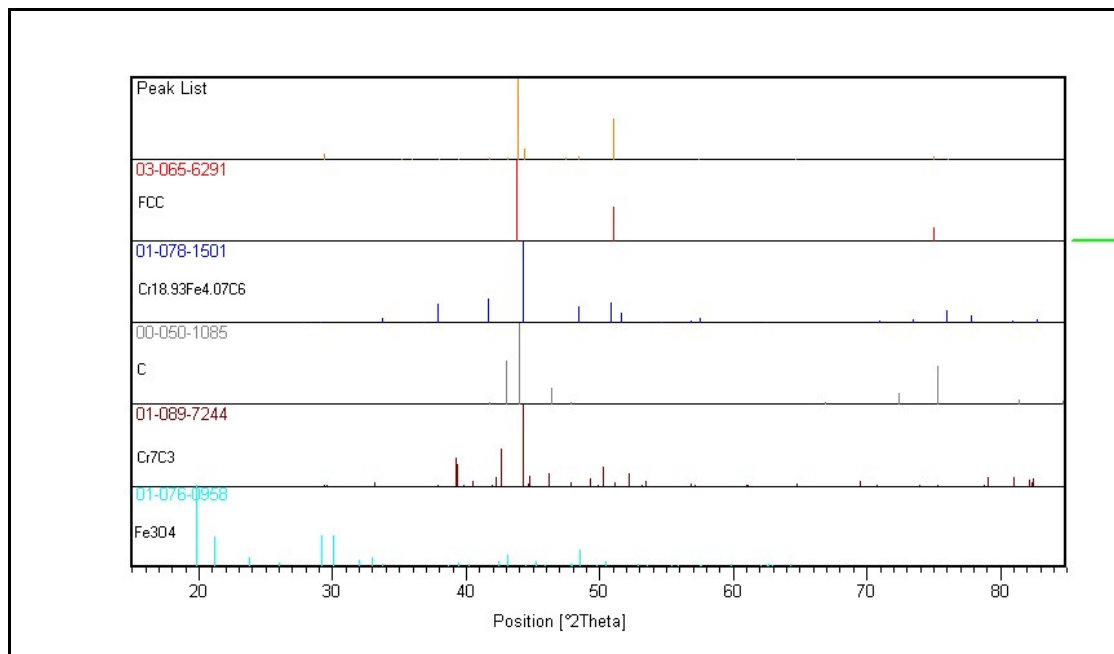
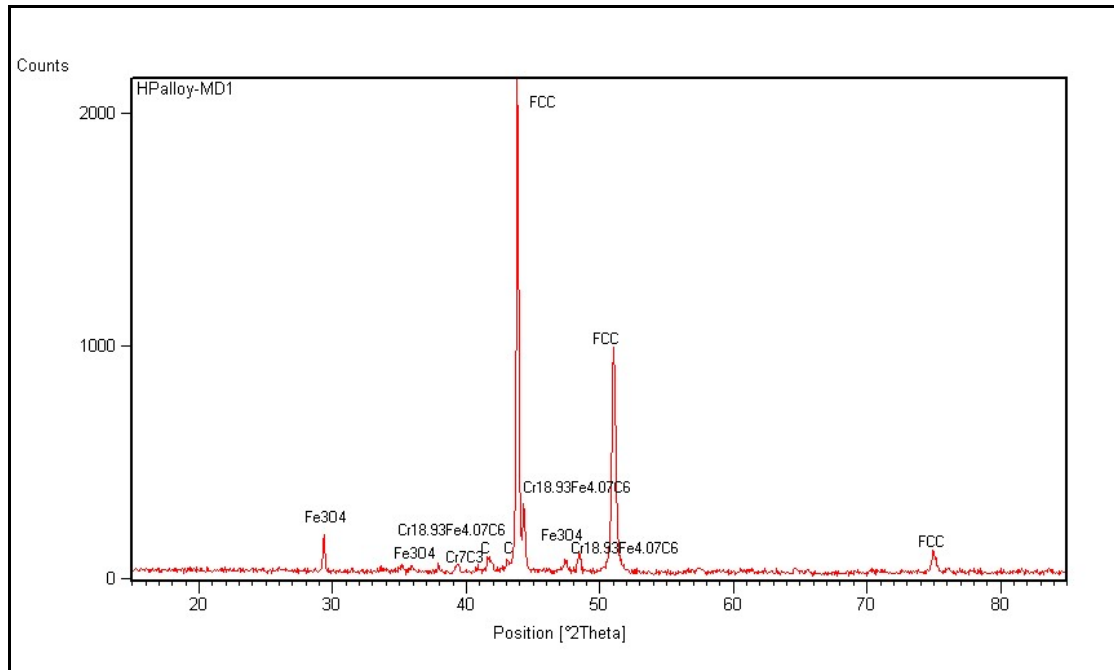
4.1 Weight Change Measurements

Table 4.1 Weight change (mg/cm^2) of the alloy after the exposure at different temperatures for different periods of time.

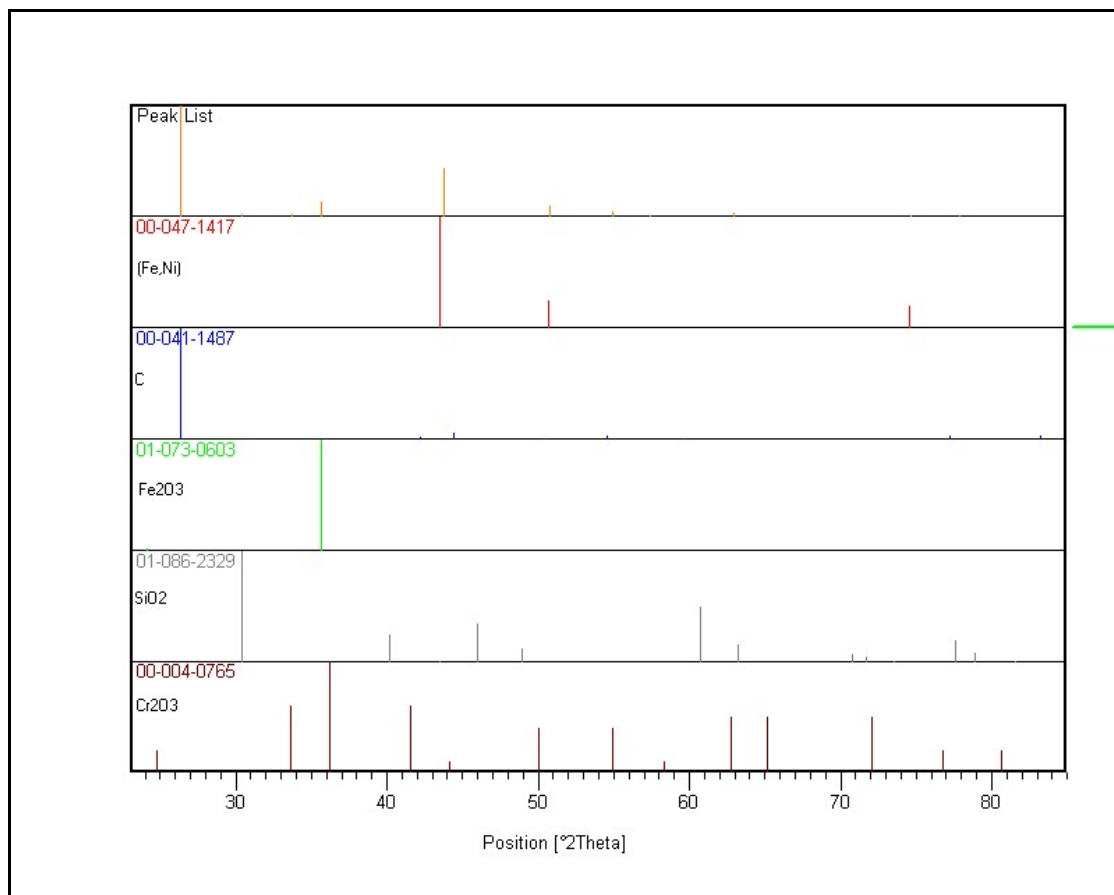
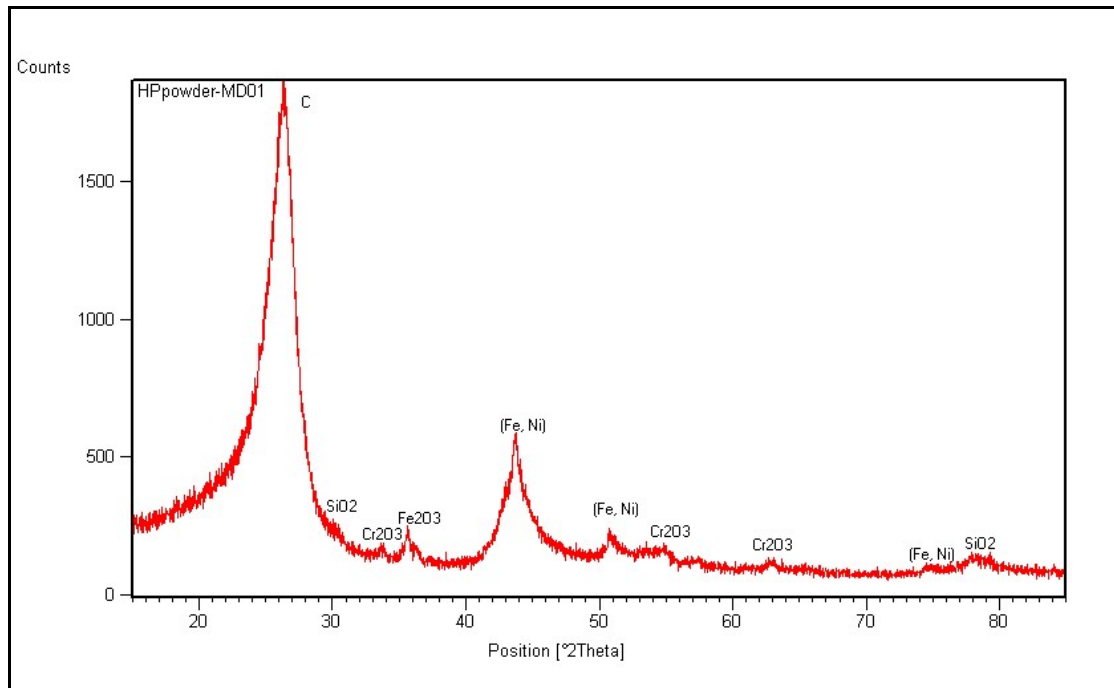
Time, h	T, °C	W_{before} , g	W_{after} , g	A, cm^2	$\Delta W/A$, mg/cm^2
100	650	15.4284	15.4265	12.4283	-0.1529
500	650	15.6406	15.6020	12.4804	-3.0928
1000	650	16.0254	16.0293	12.4947	0.3081
100	750	15.1298	15.1422	12.2436	1.0128
500	750	15.3179	15.2813	12.3781	-2.9568
1000	750	14.1875	14.1888	11.8917	0.1093
100	850	15.1775	15.1813	12.2612	0.3099
500	850	14.0866	14.0975	12.0000	0.9083
1000	850	14.3302	14.3272	12.1547	-0.2468

4.2 X ray Diffraction Results

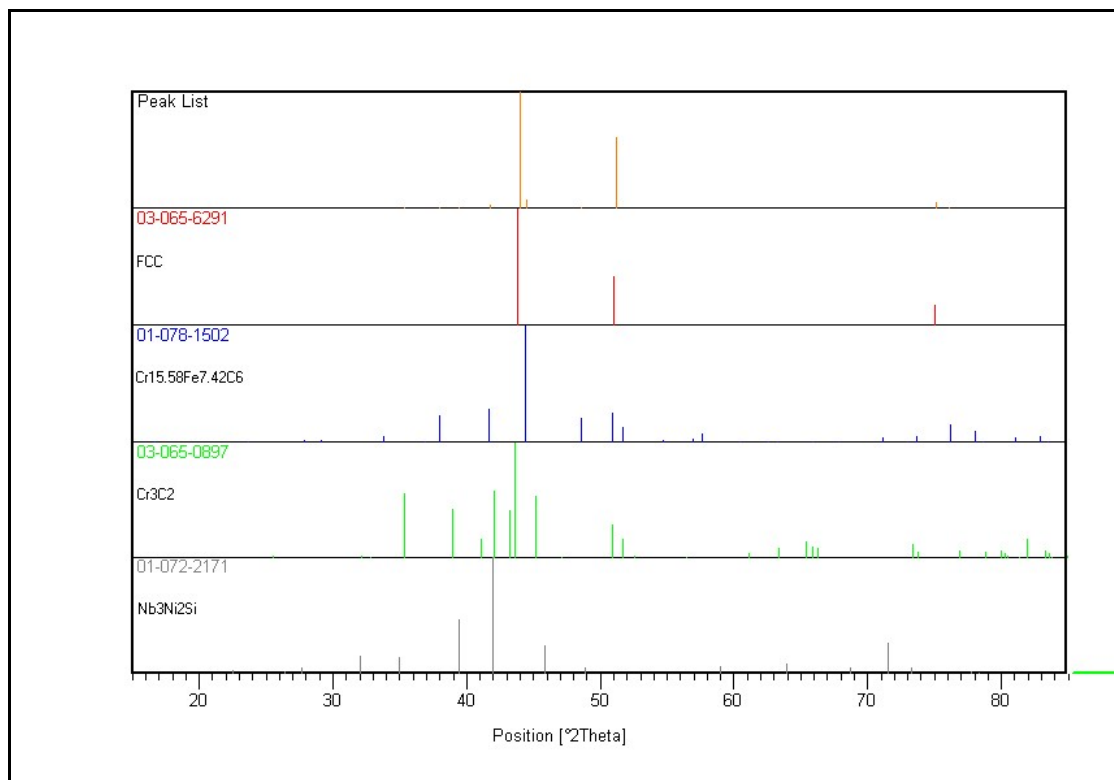
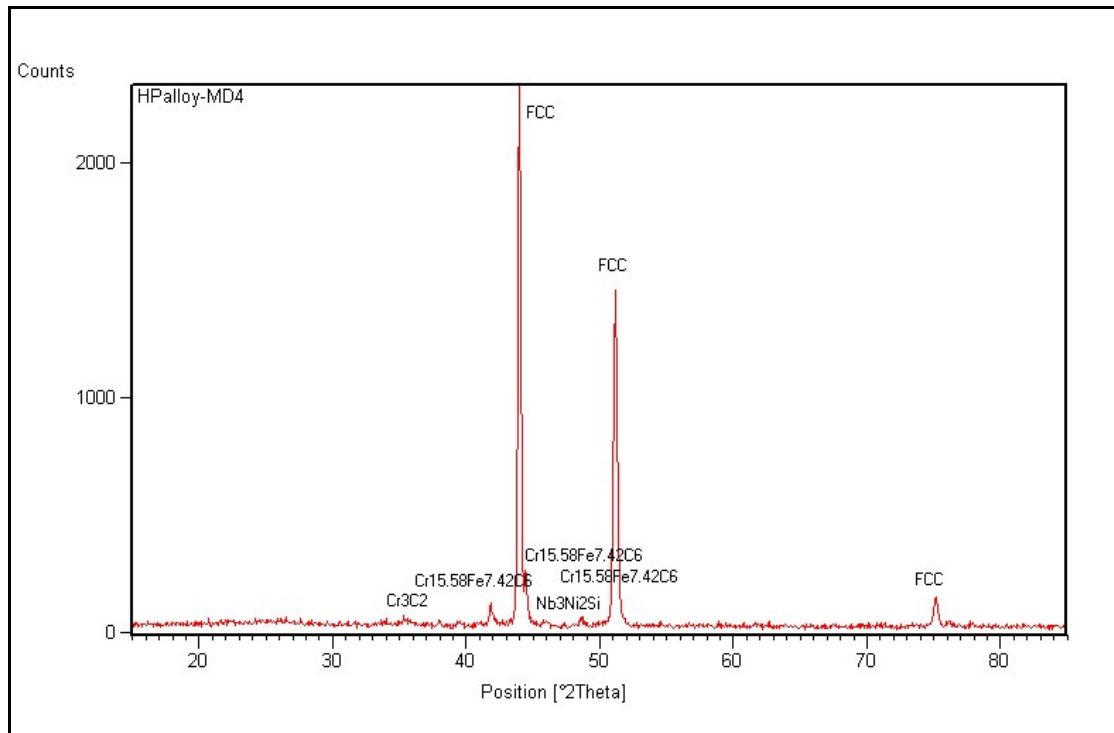
4.2.1 HP after 100h at 650°C



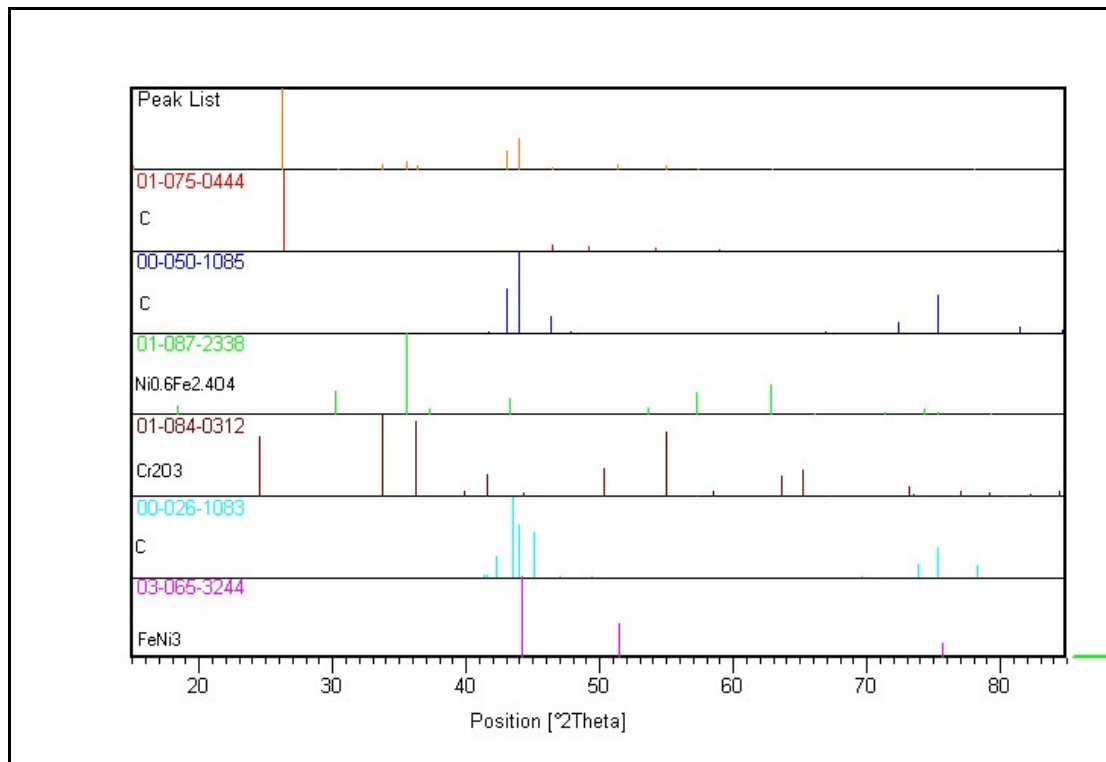
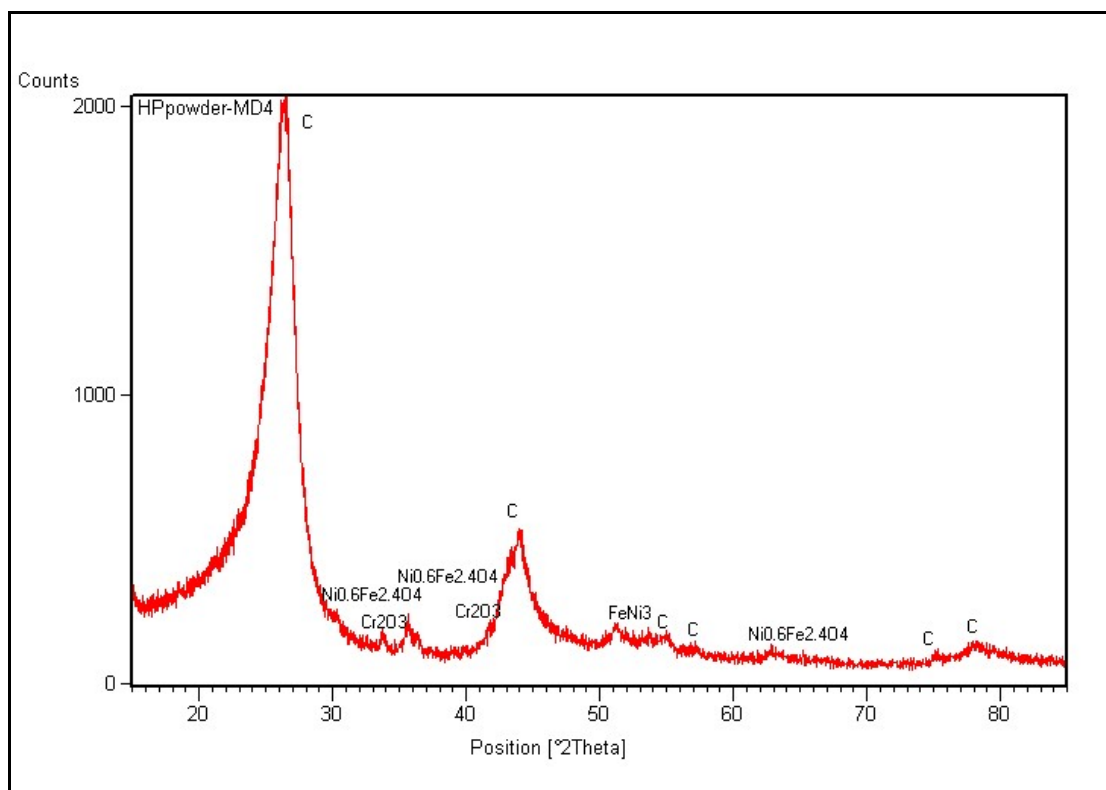
4.2.2 Deposit removed from HP after 100h at 650°C



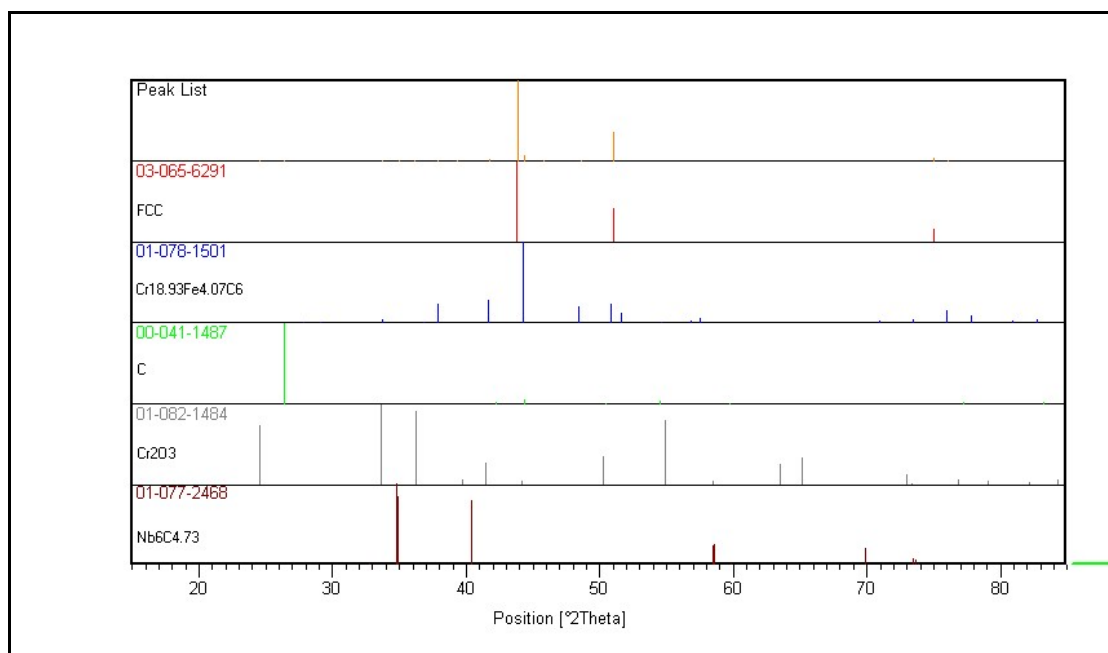
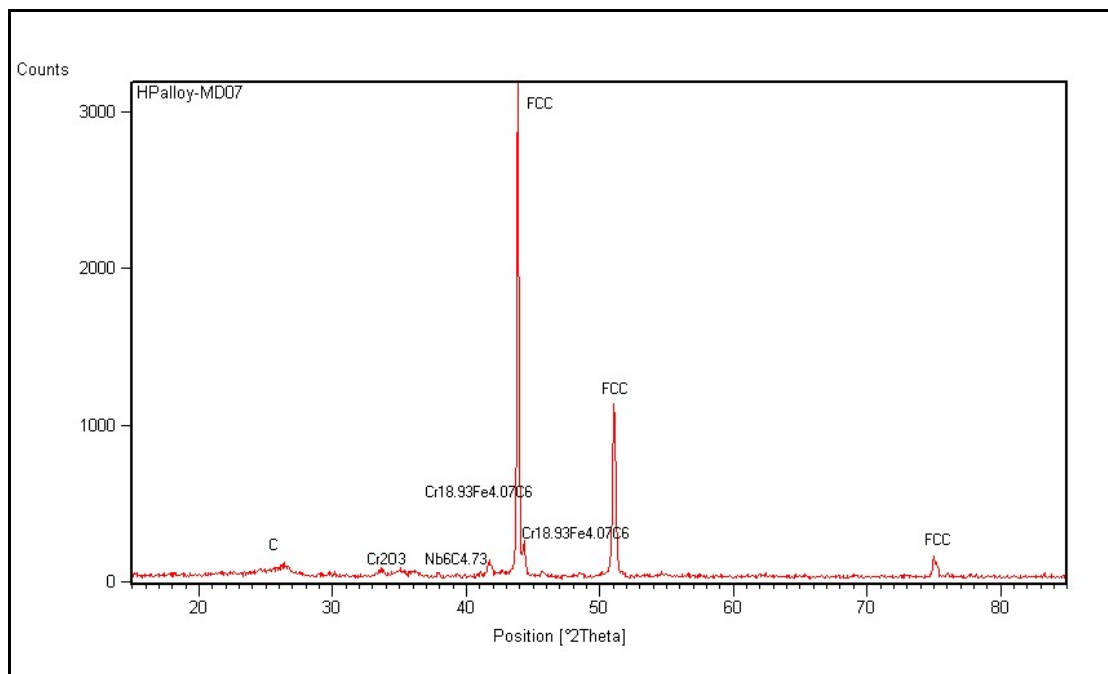
4.2.3 HP after 500h at 650°C



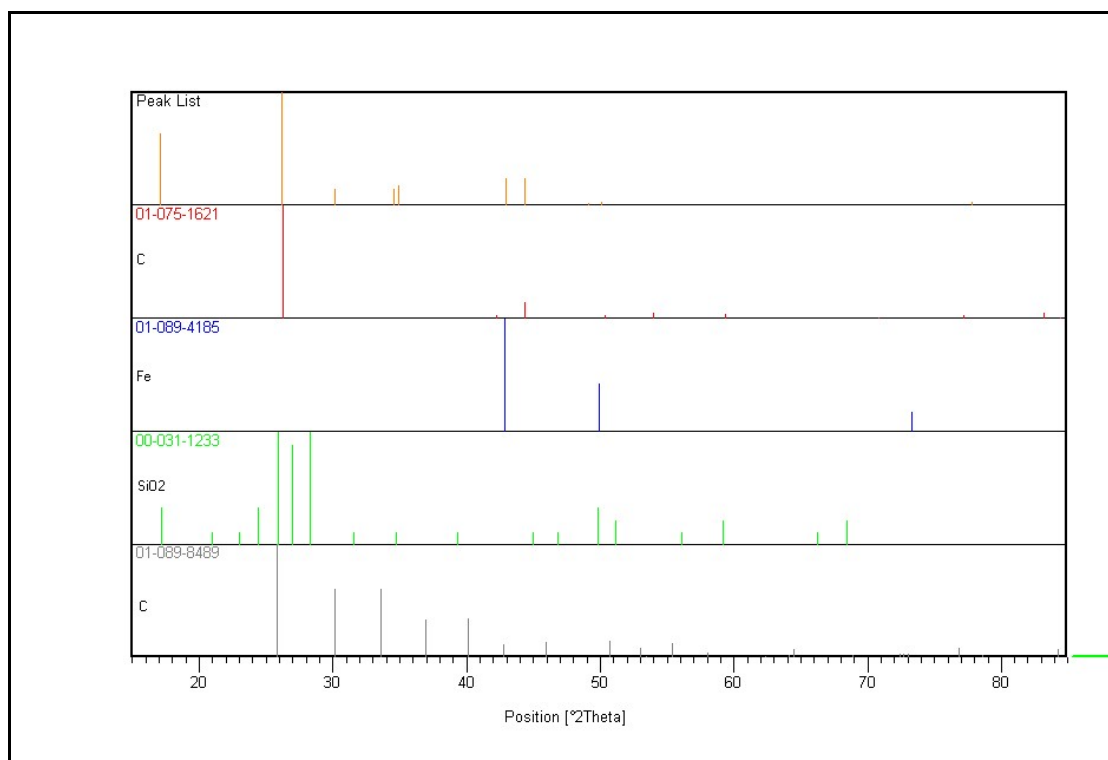
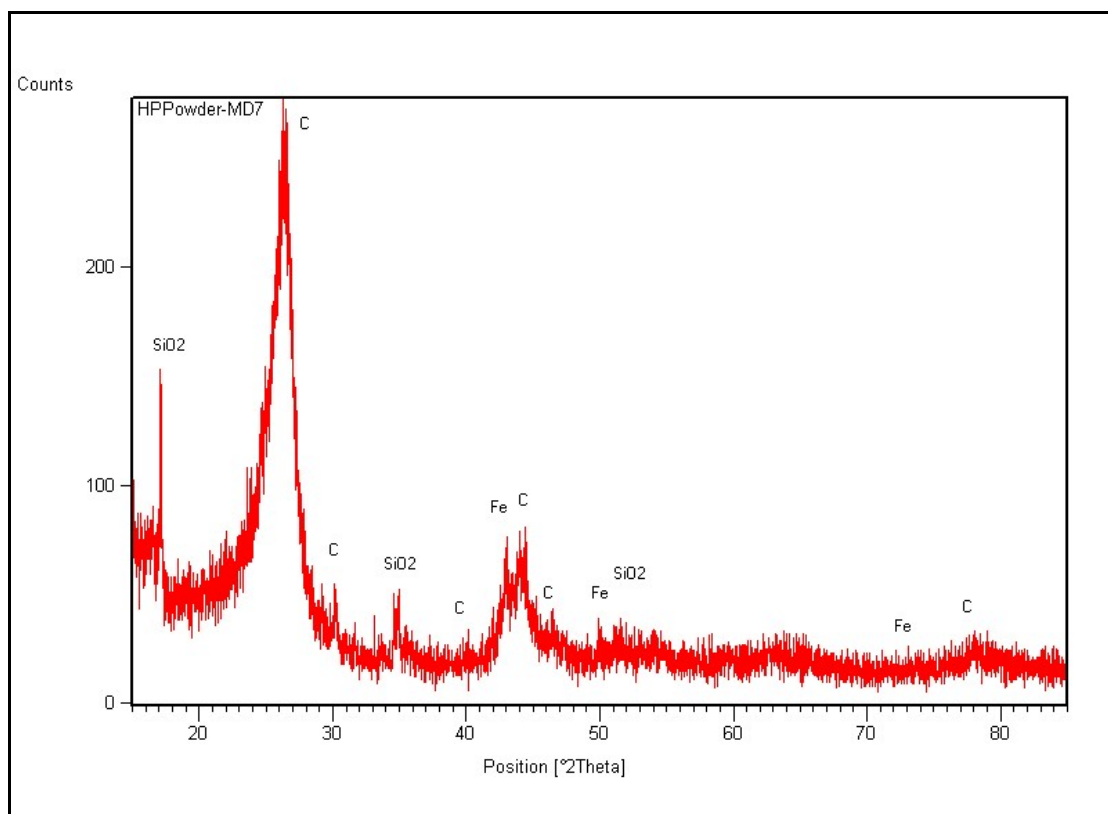
4.2.4 Deposit removed from HP after 500h at 650°C



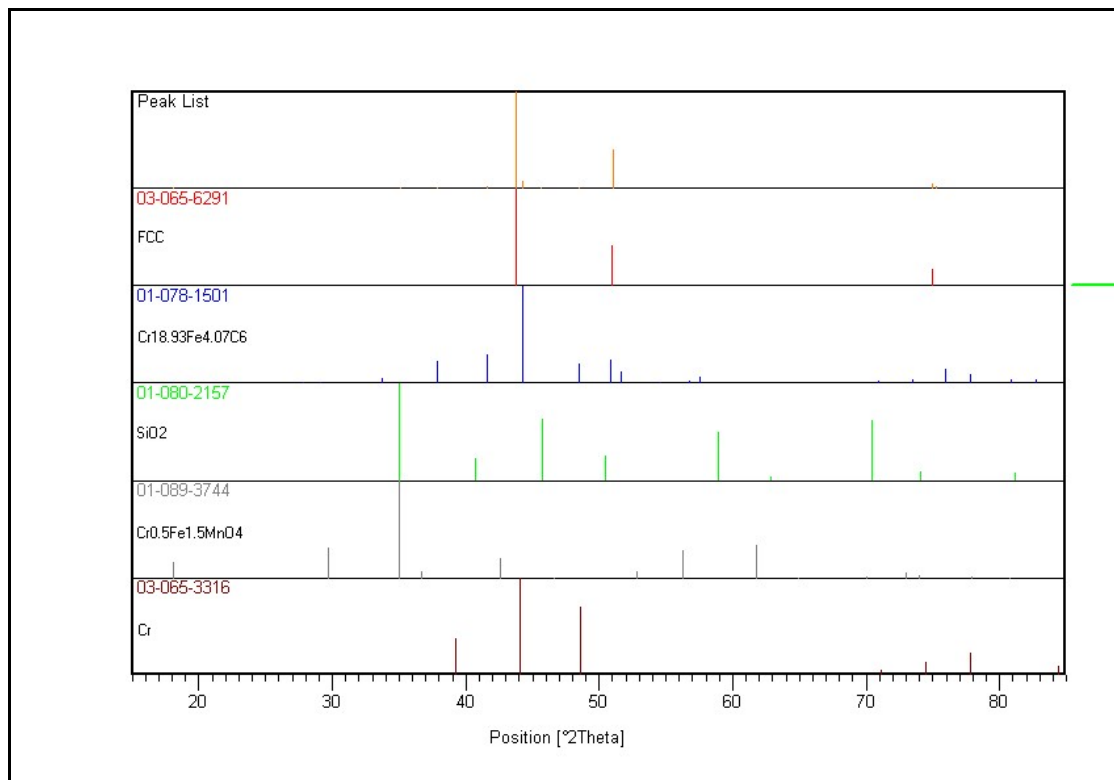
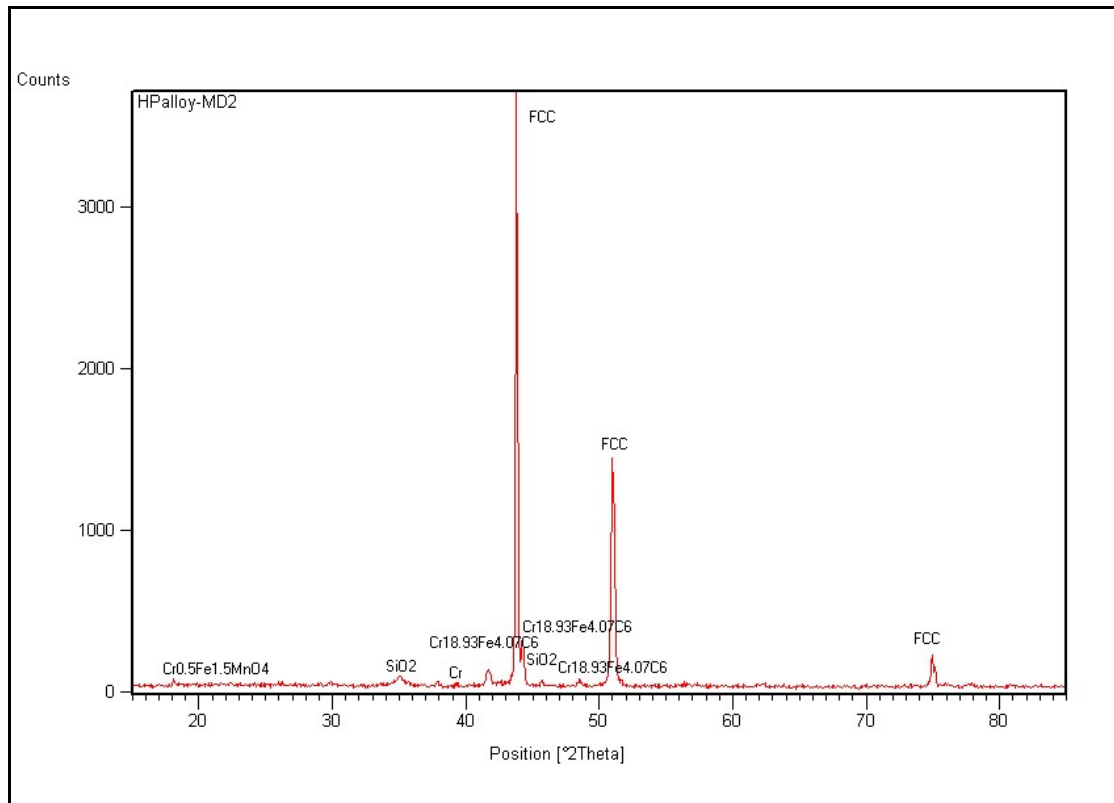
4.2.5 HP after 1000h at 650°C



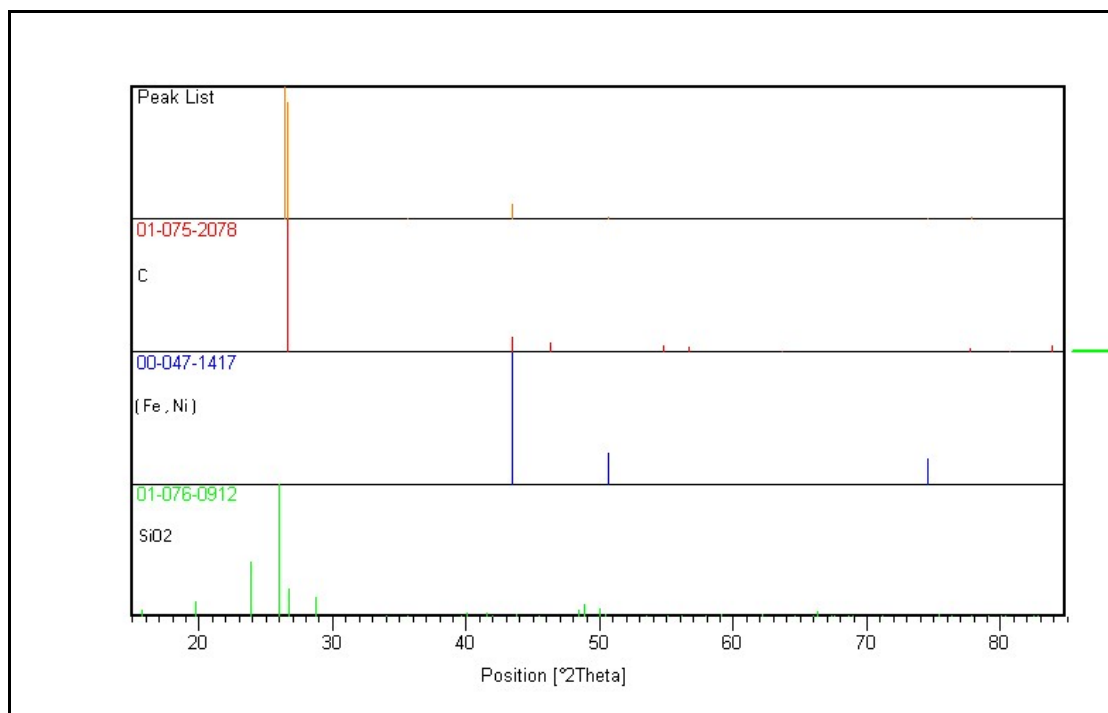
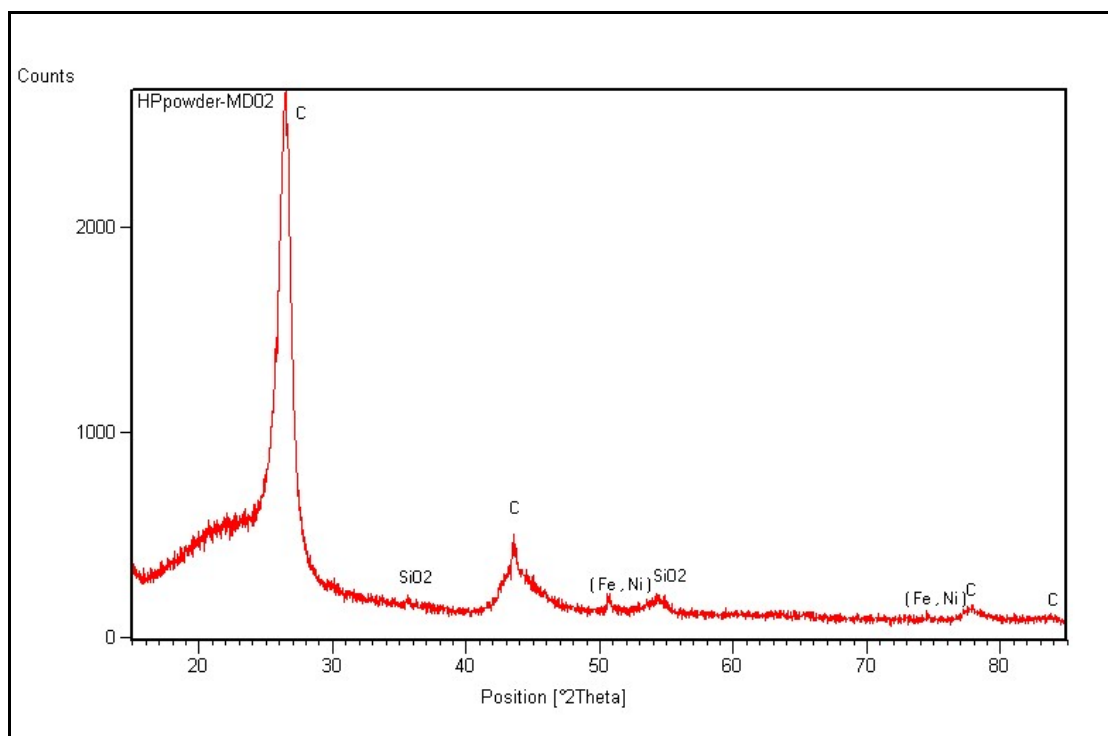
4.2.6 Deposit removed from HP after 1000h at 650°C



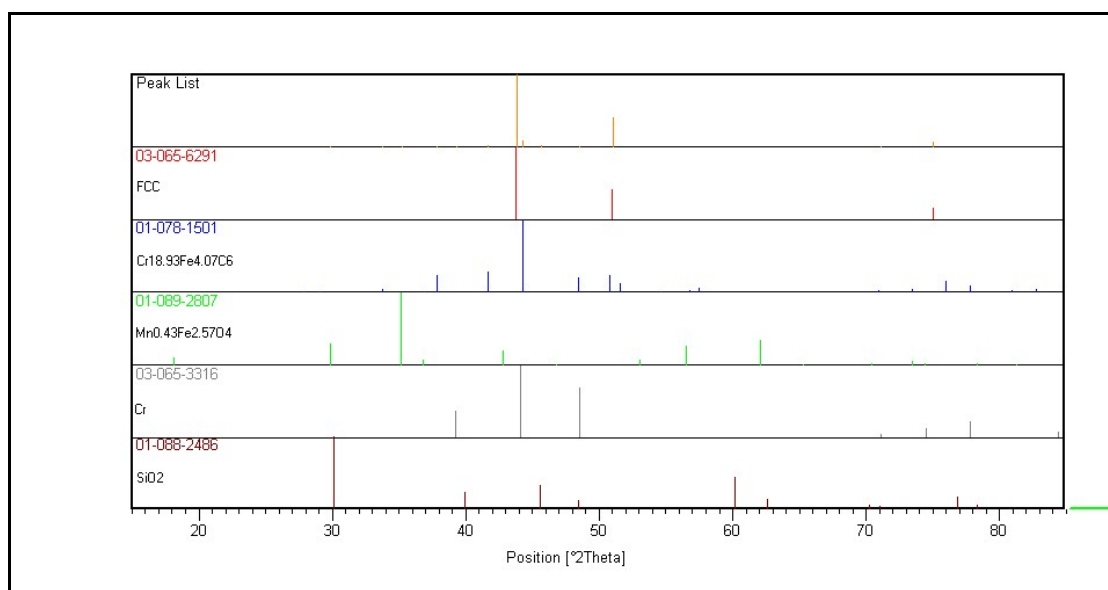
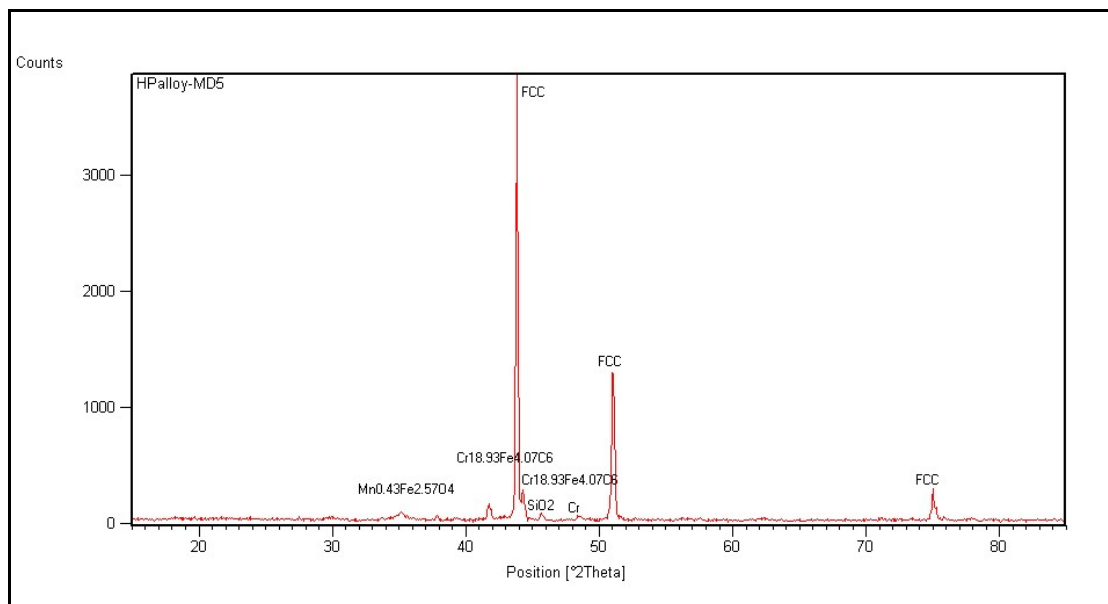
4.2.7 HP after 100h at 750°C



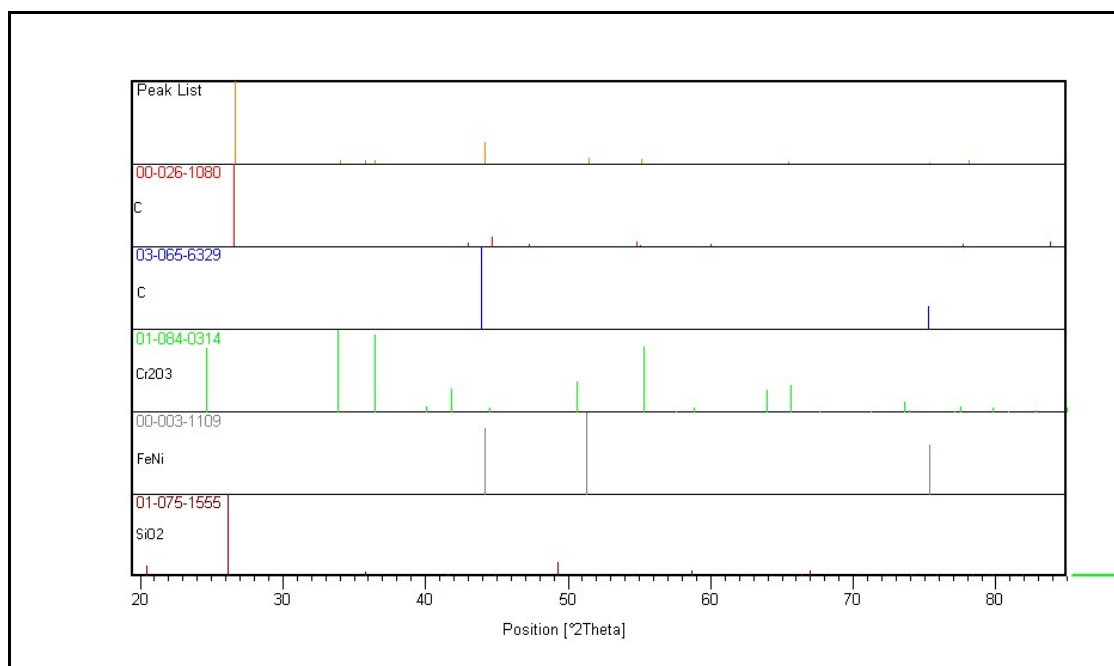
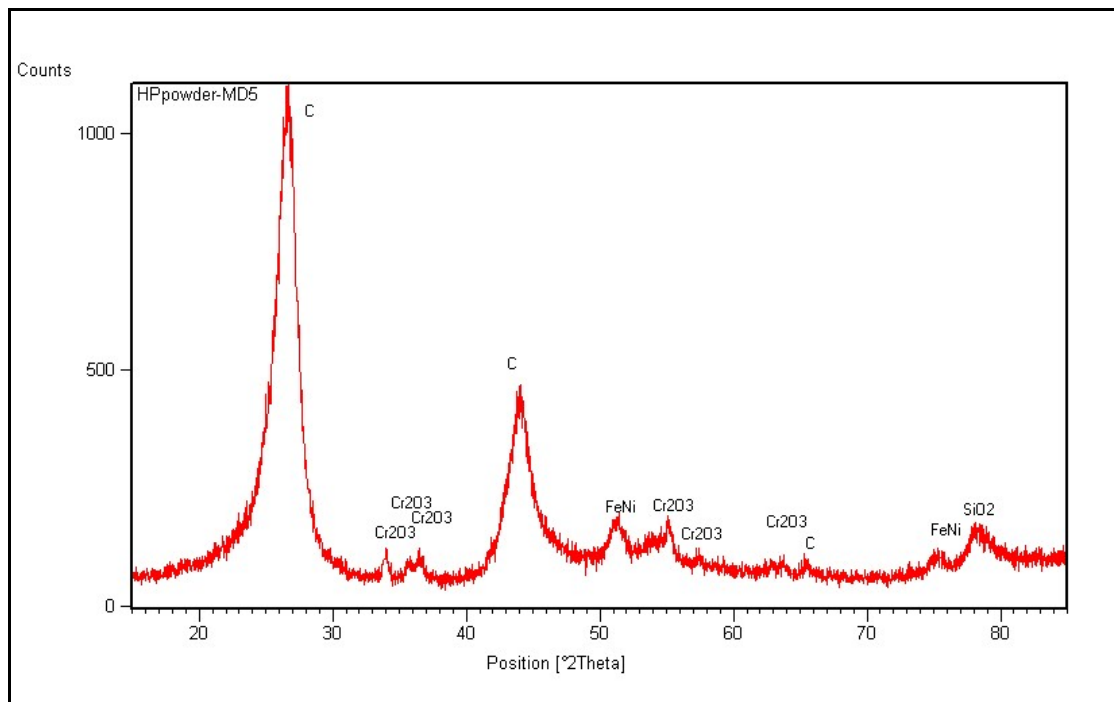
4.2.8 Deposit removed from HP after 100h at 750°C



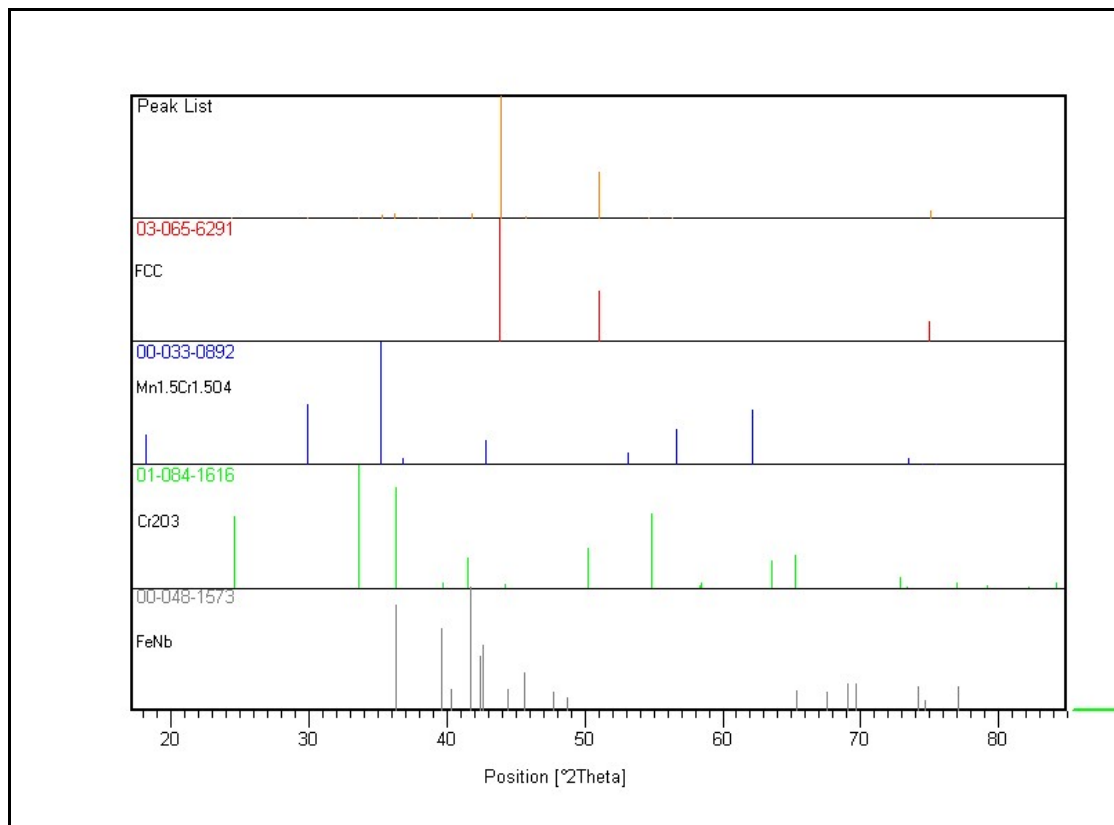
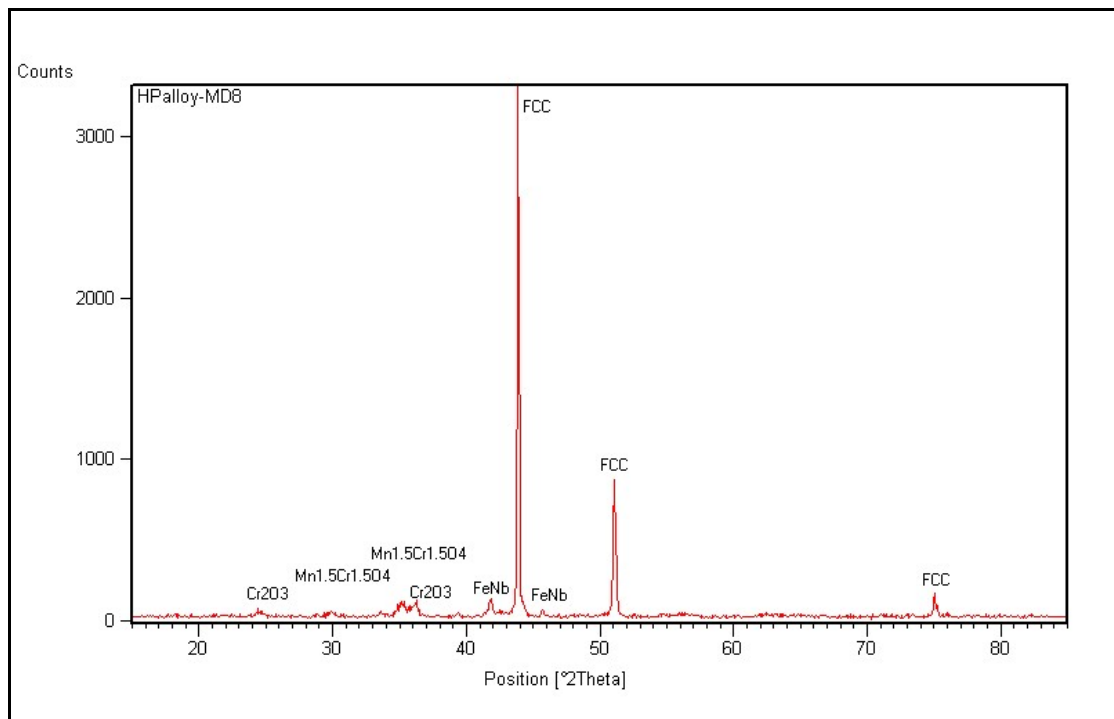
4.2.9 HP after 500h at 750°C



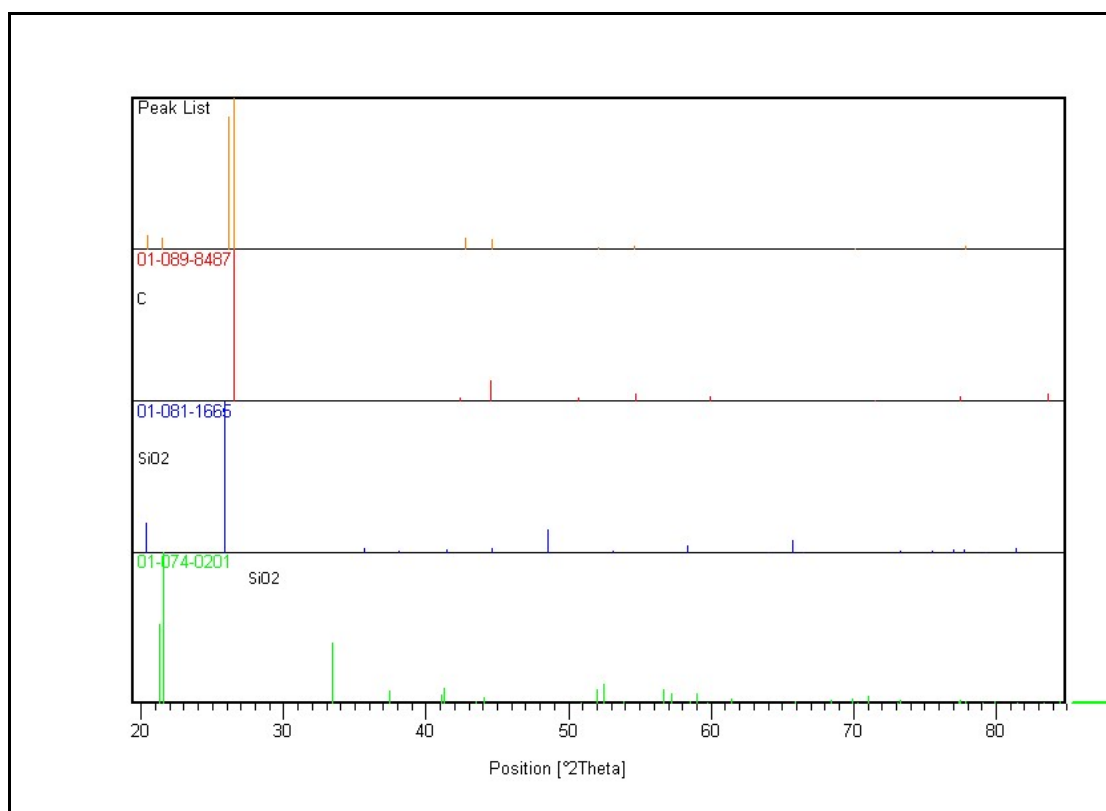
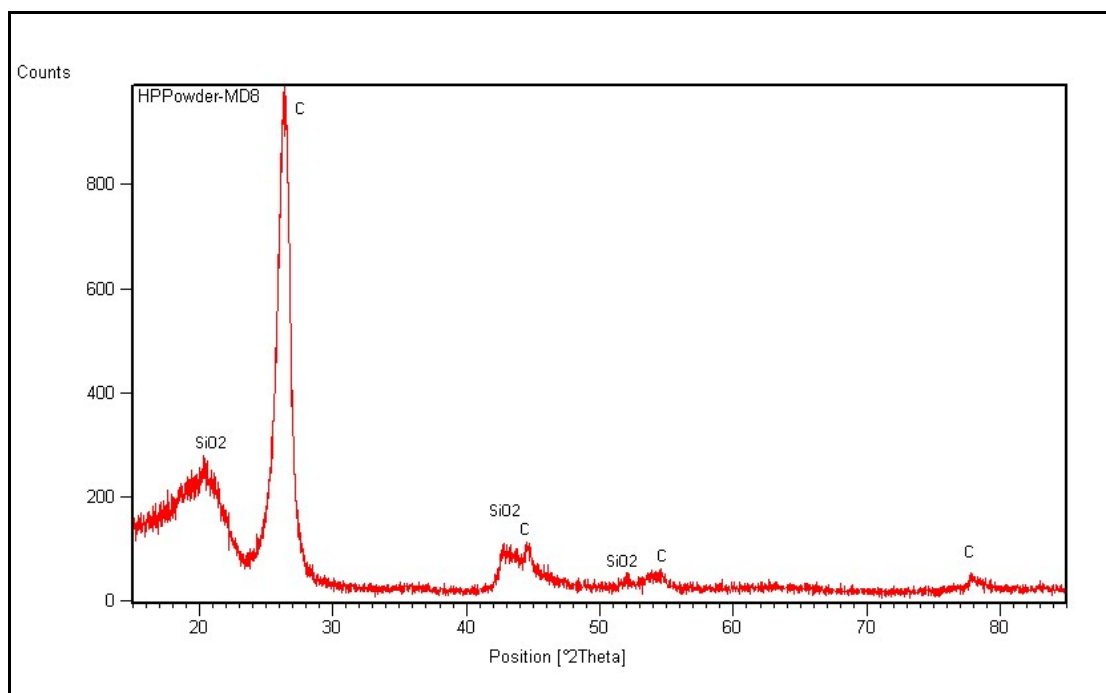
4.2.10 Deposit removed from HP after 500h at 750°C



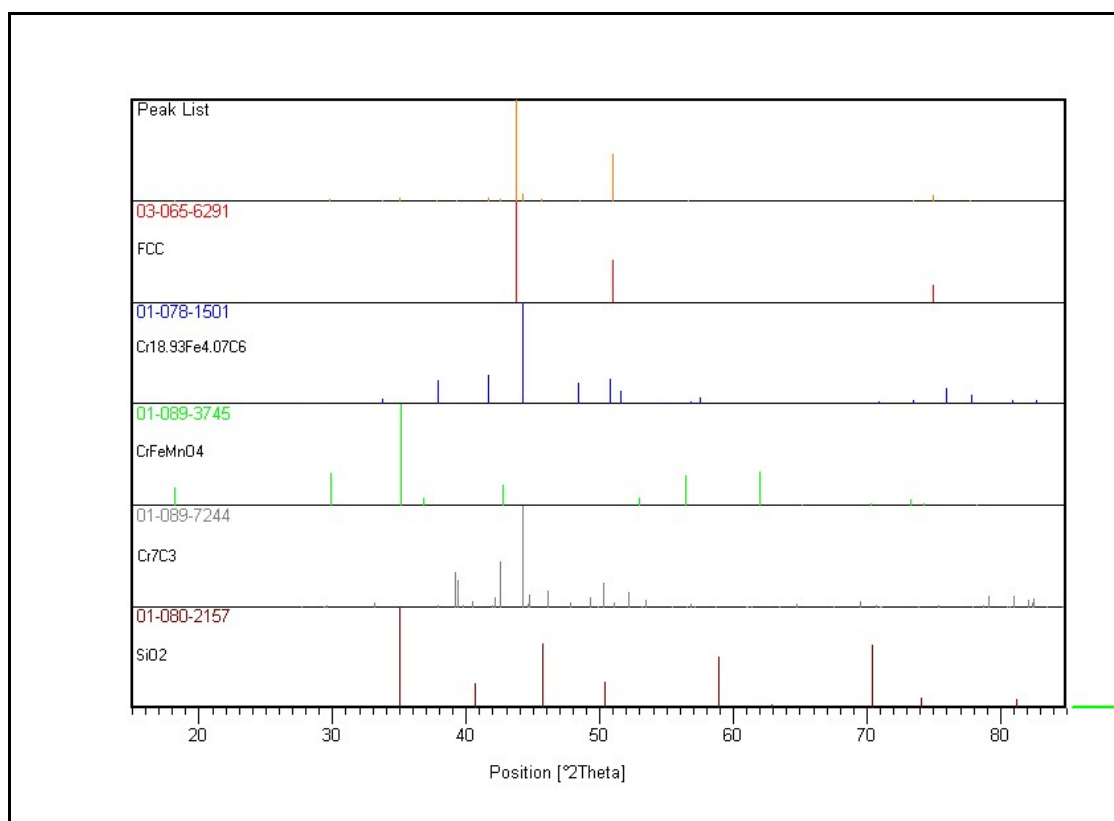
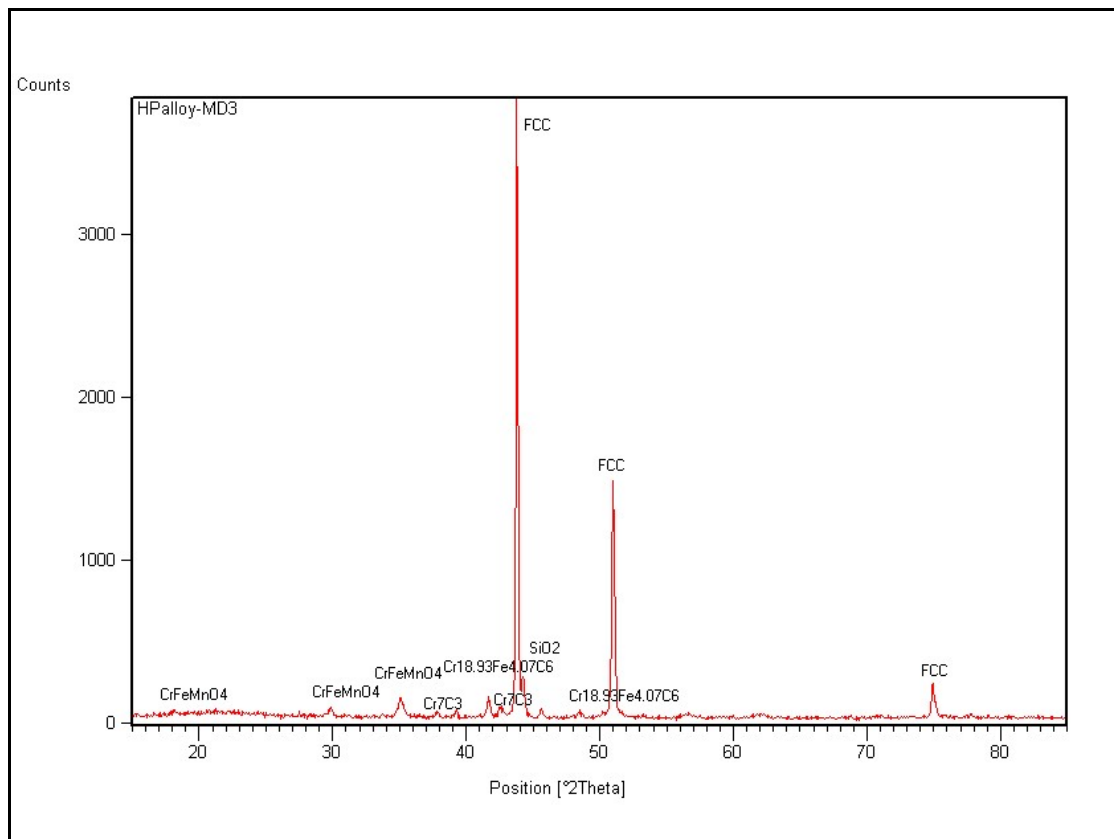
4.2.11 HP after 1000h at 750°C



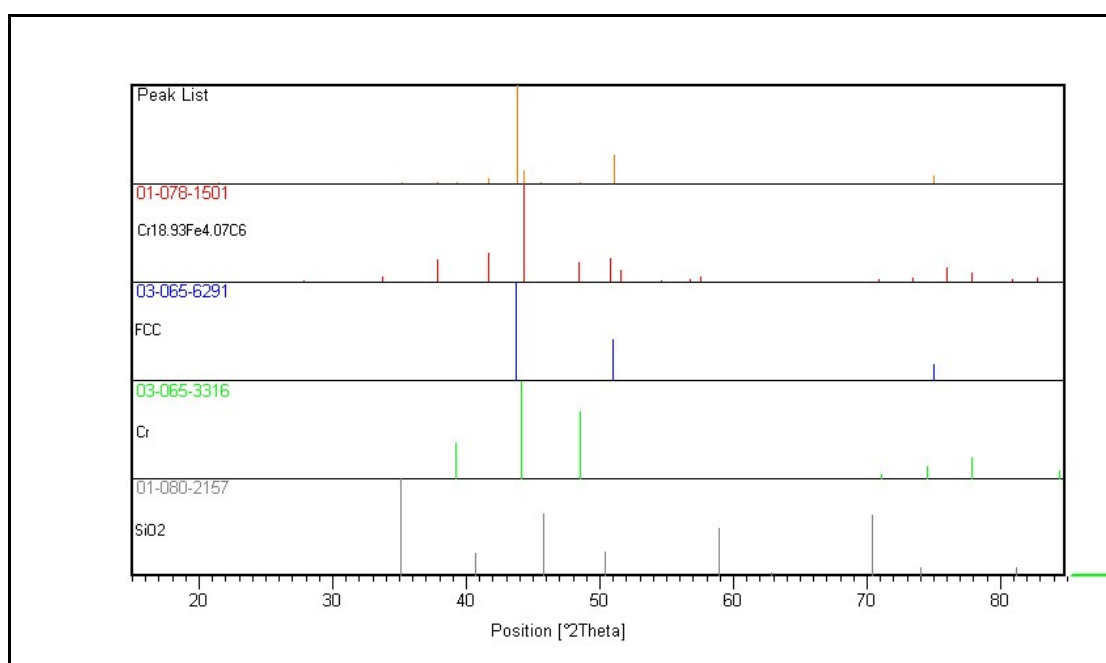
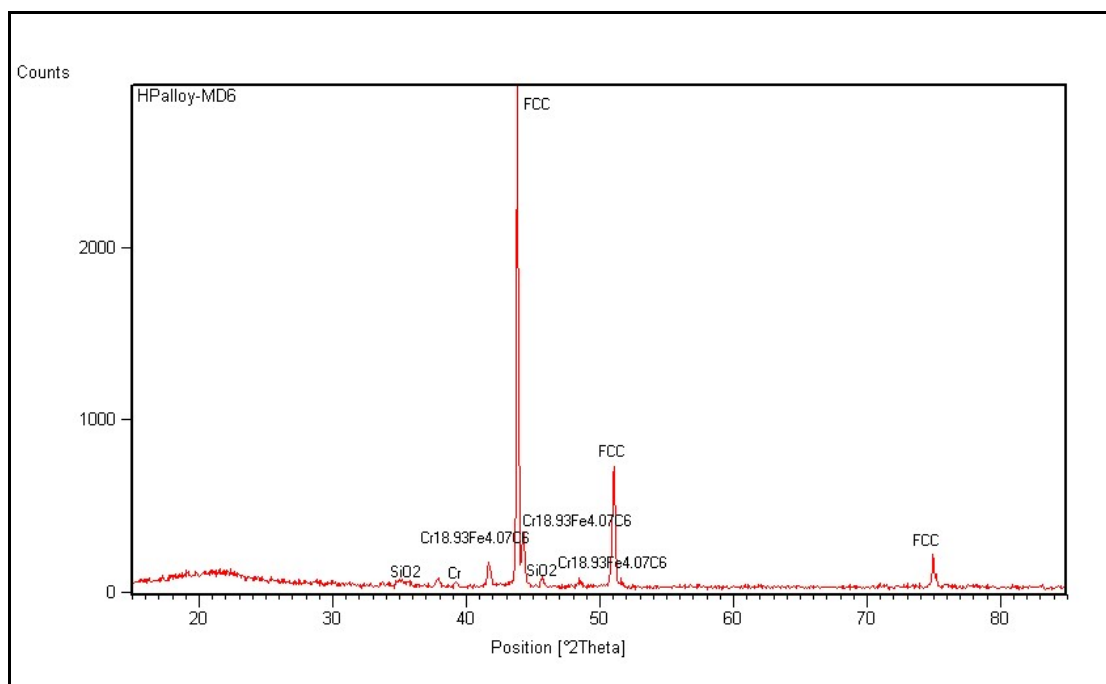
4.2.12 Deposit removed from HP after 1000h at 750°C



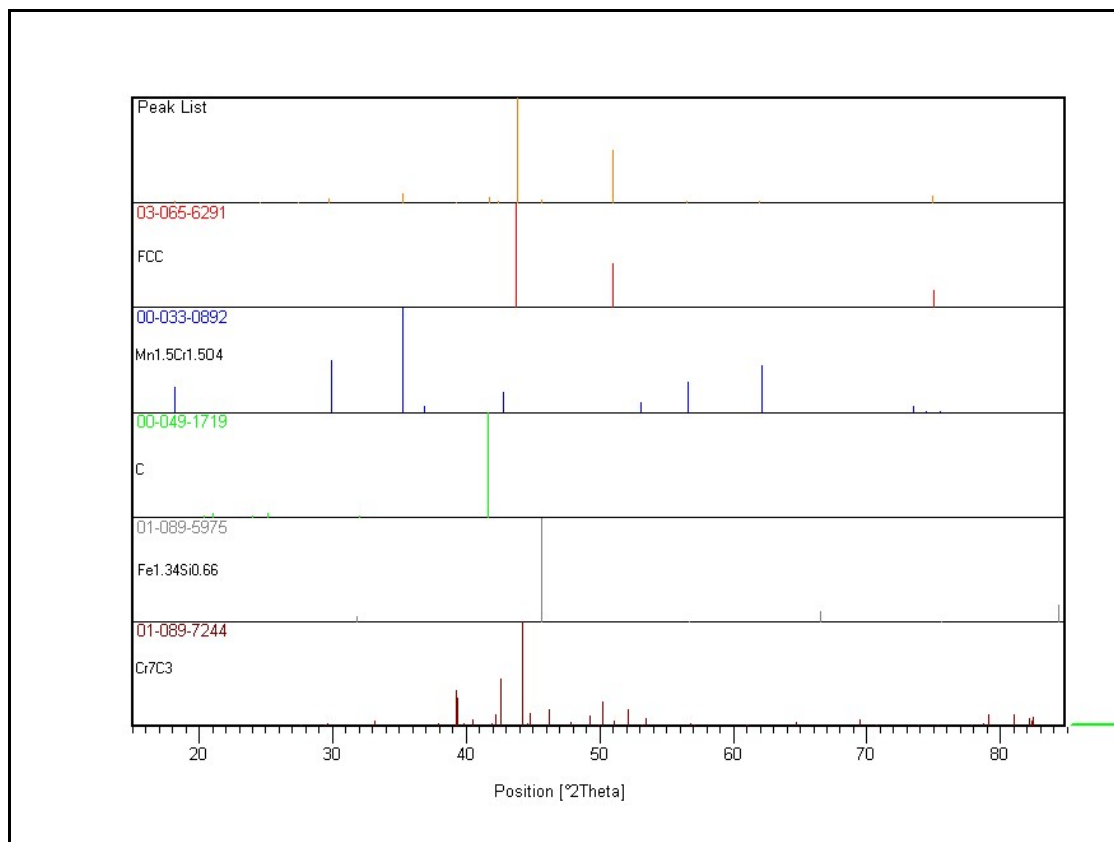
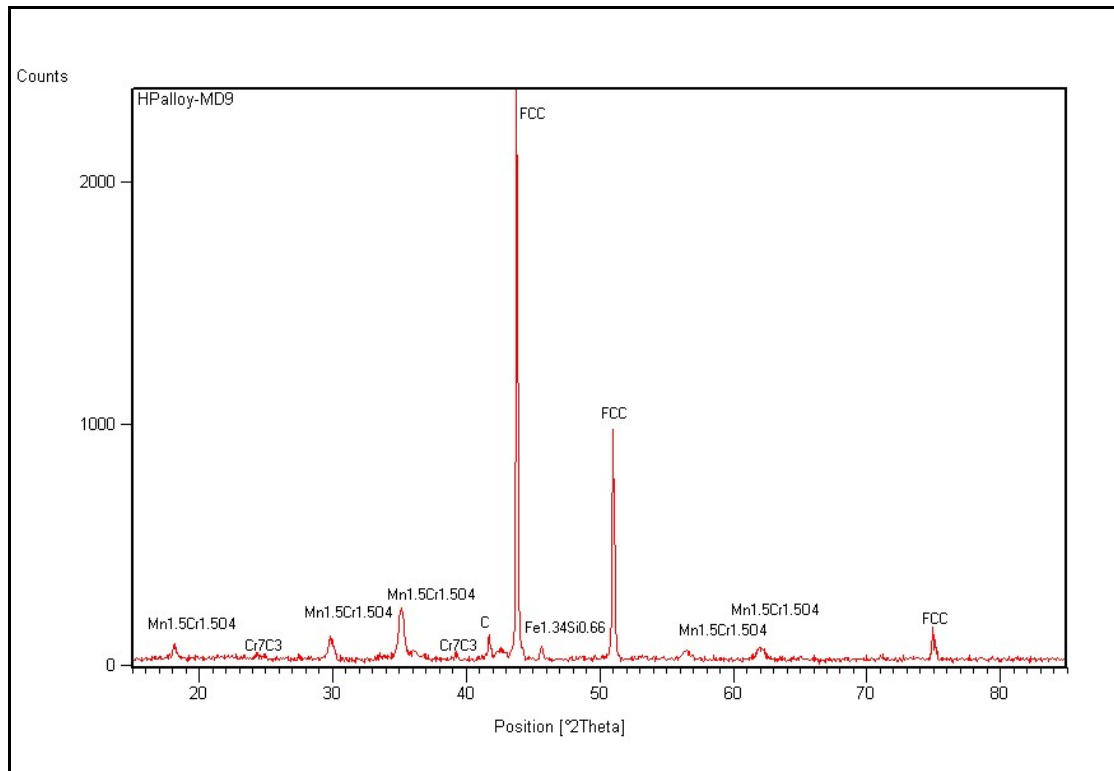
4.2.13 HP after 100h at 850°C



4.2.14 HP after 500h at 850°C

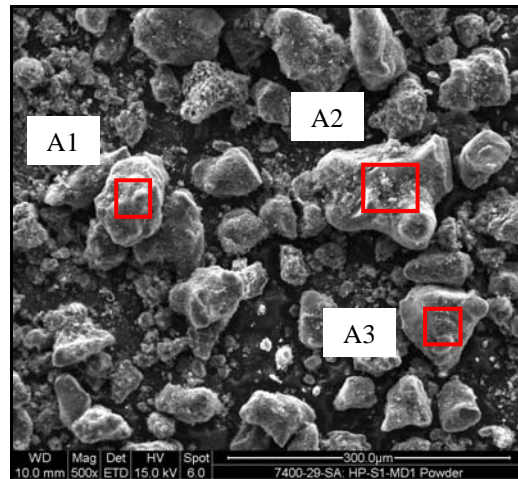


4.2.15 HP after 1000h at 850°C

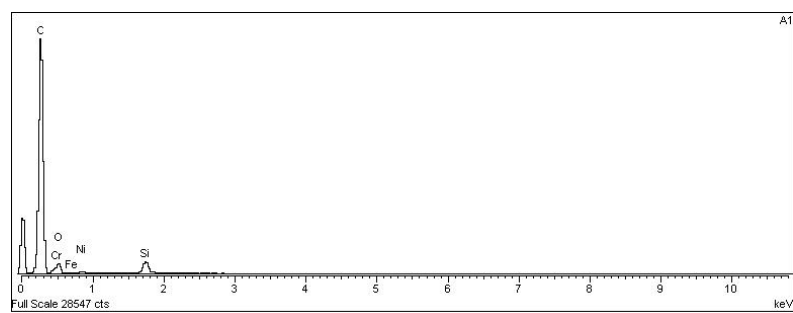


4.3 SEM/EDX Deposits Analysis

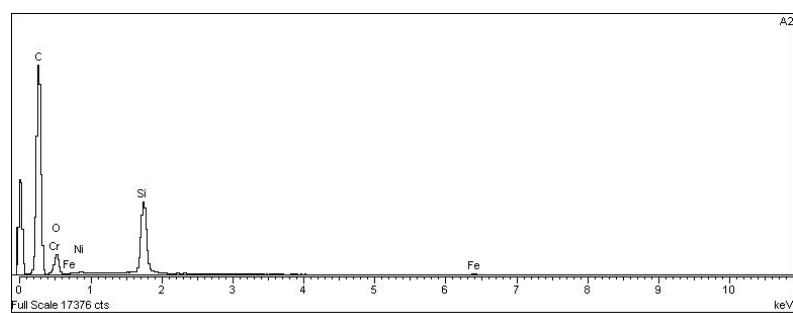
4.3.1 Deposit collected from HP after 100h at 650°C



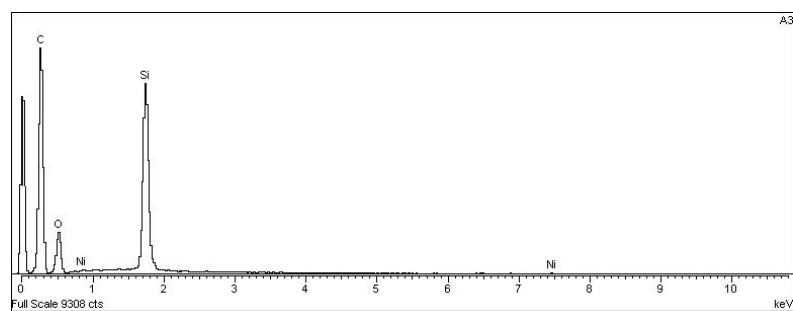
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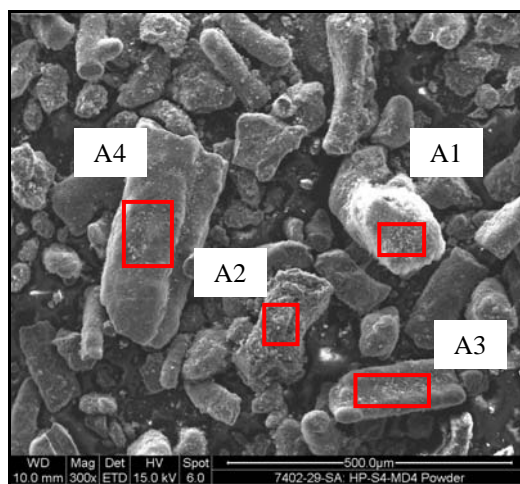
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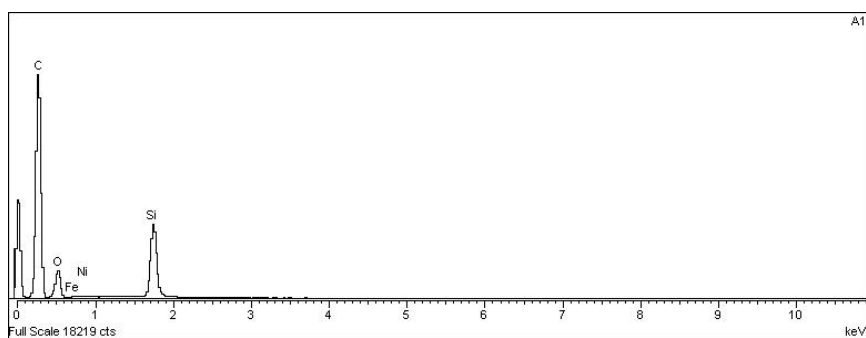
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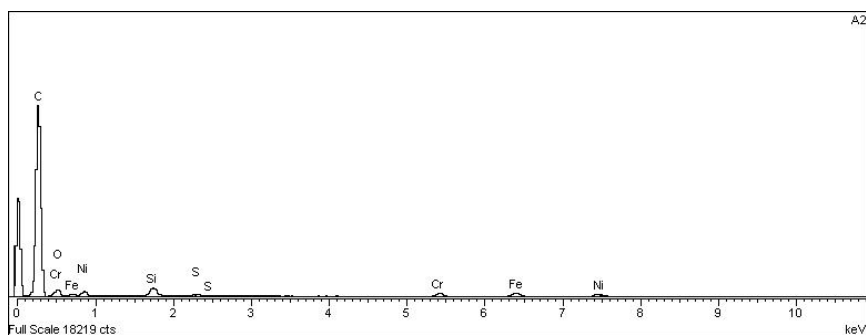
4.3.2 Deposit collected from HP after 500h at 650°C



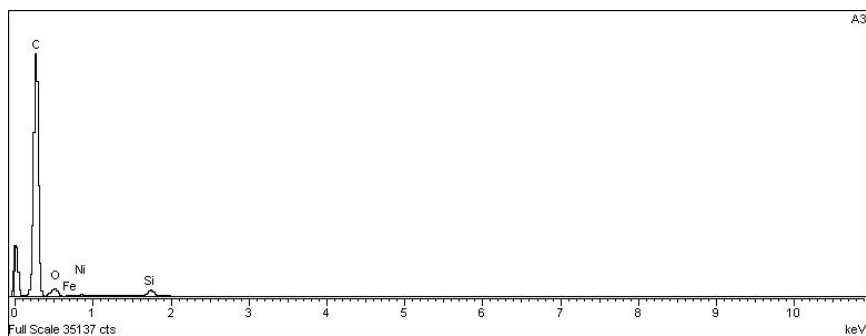
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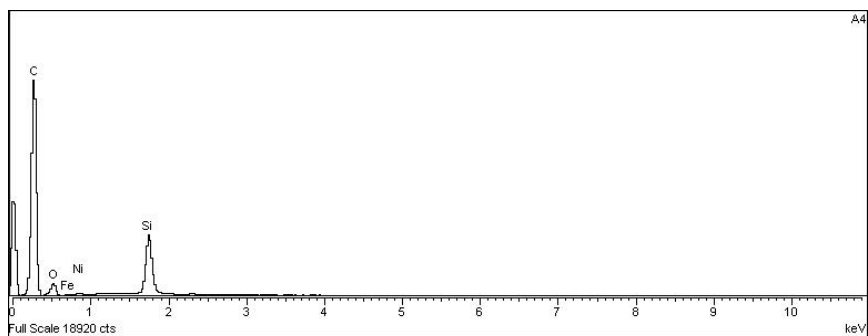
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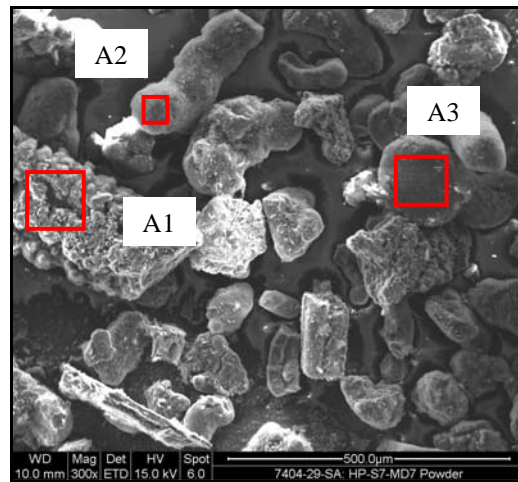
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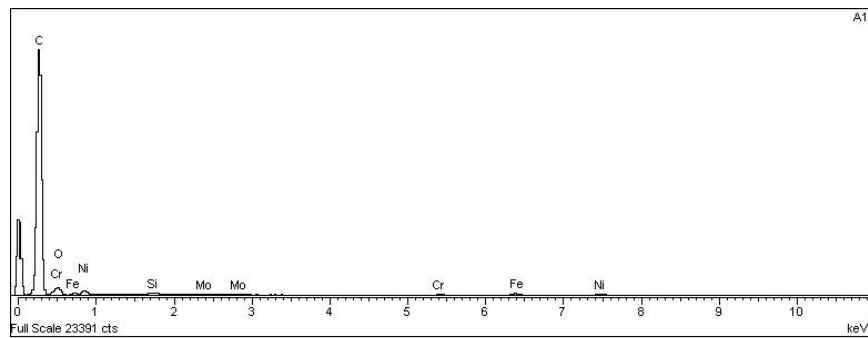
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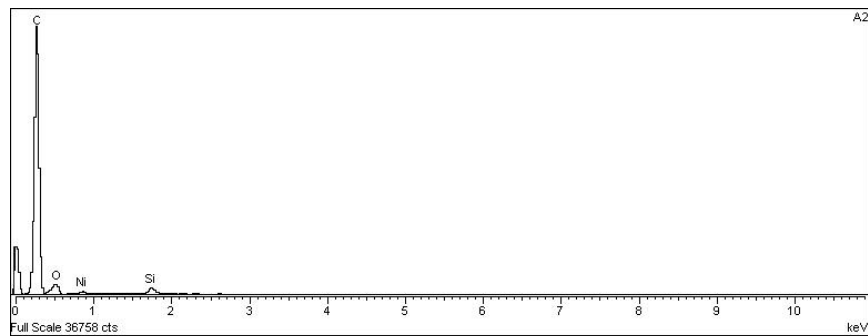
4.3.3 Deposit collected from HP after 1000h at 650°C



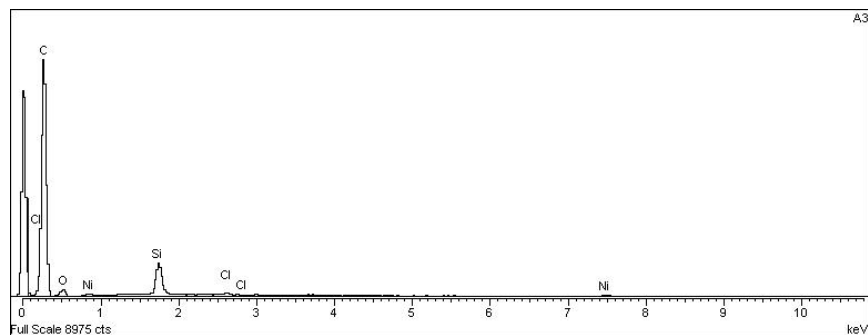
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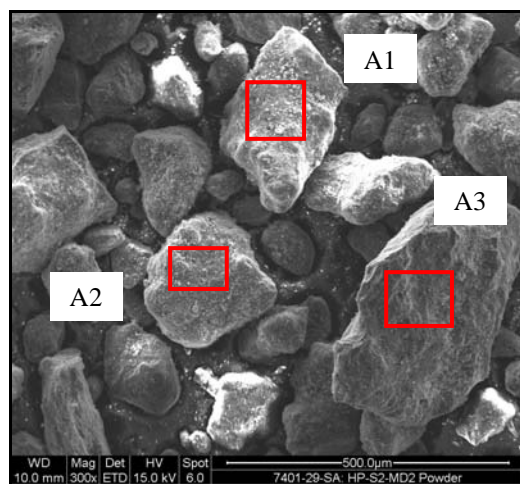
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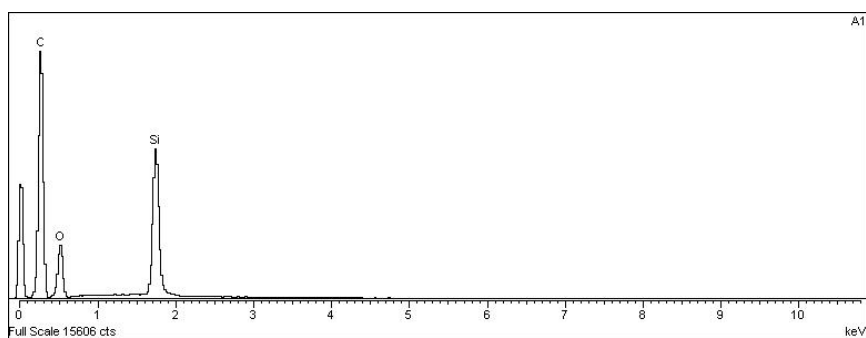
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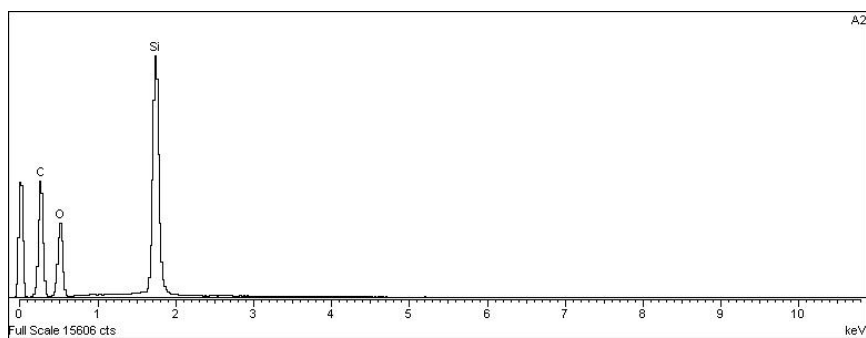
4.3.4 Deposit collected from HP after 100h at 750°C



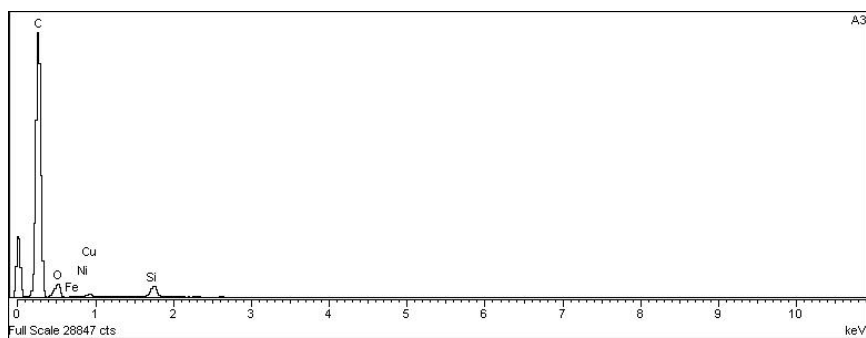
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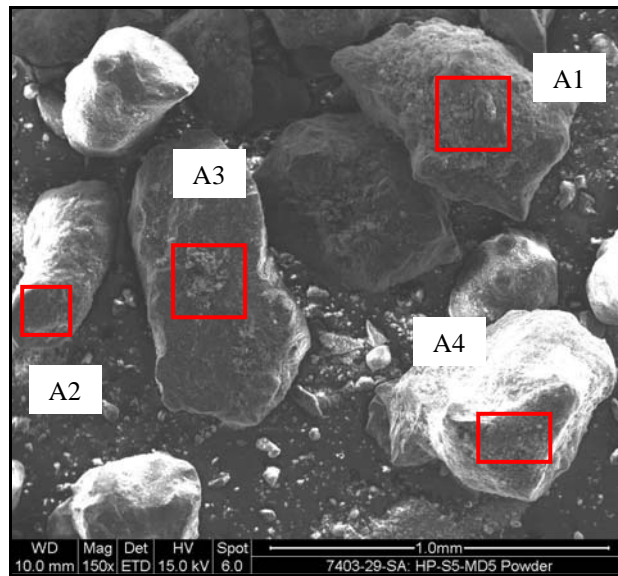
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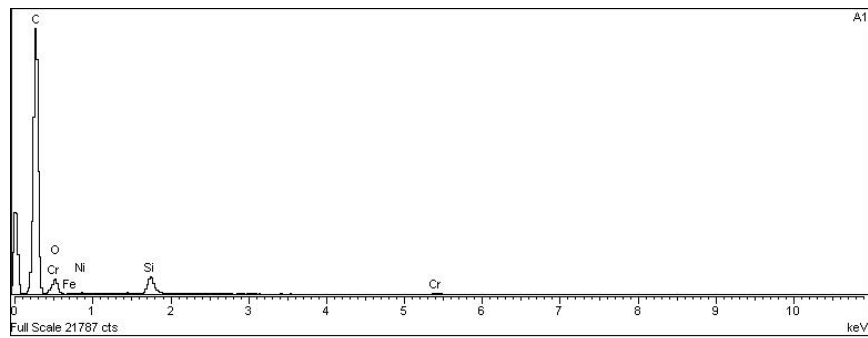
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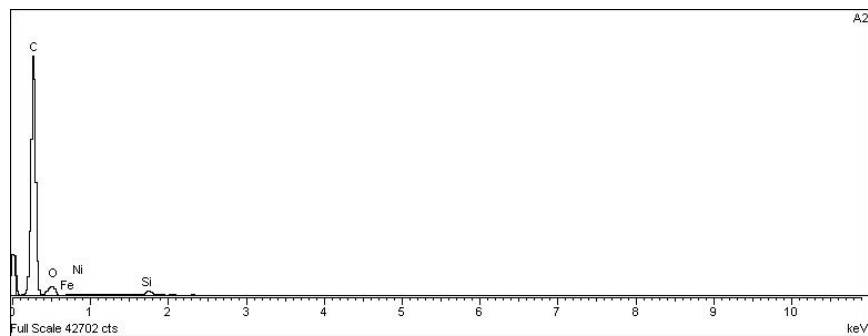
4.3.5 Deposit collected from HP after 500h at 750°C



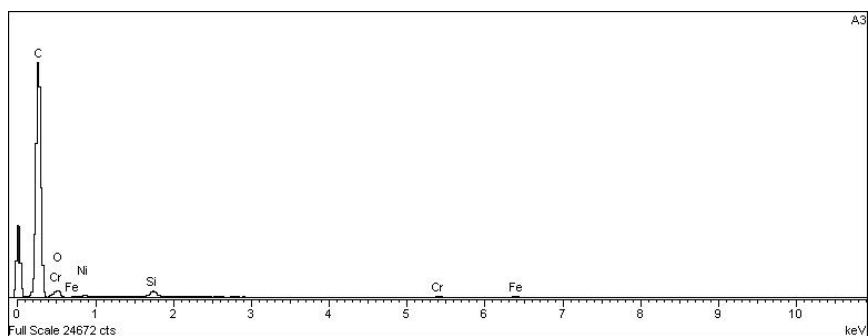
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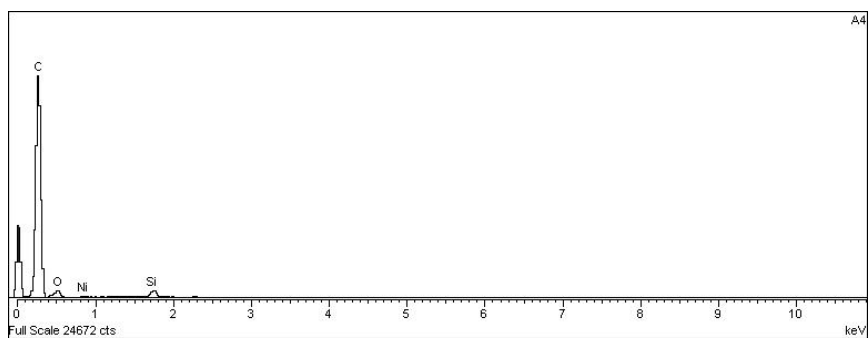
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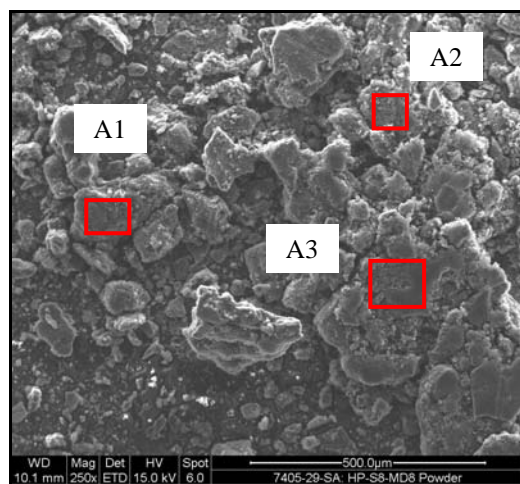
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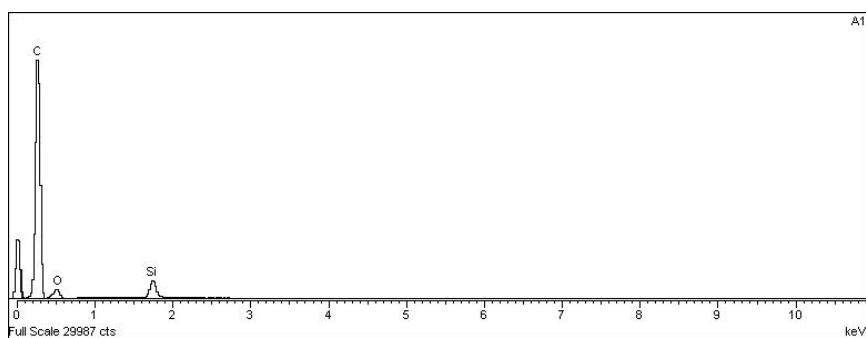
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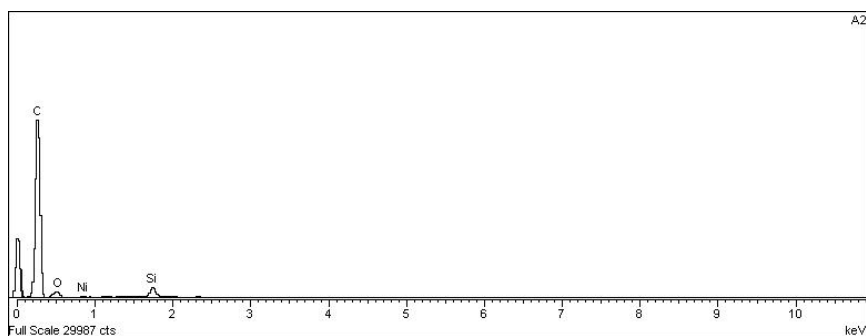
4.3.6 Deposit collected from HP after 1000h at 750°C



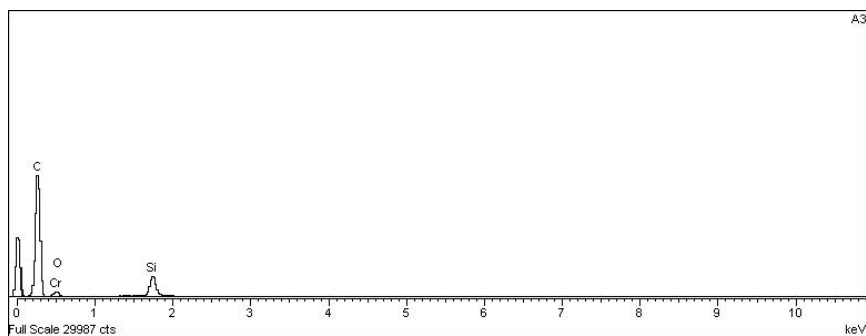
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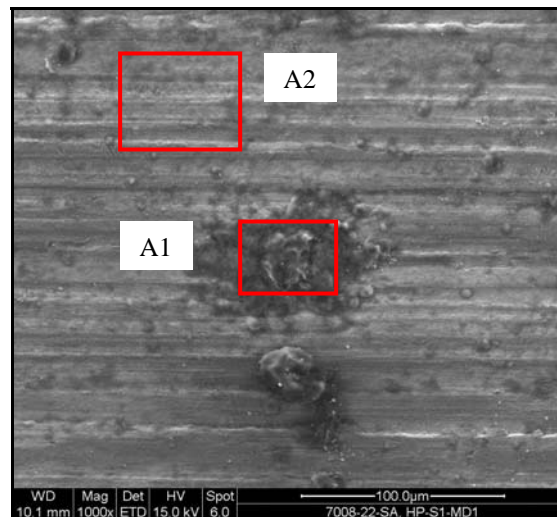


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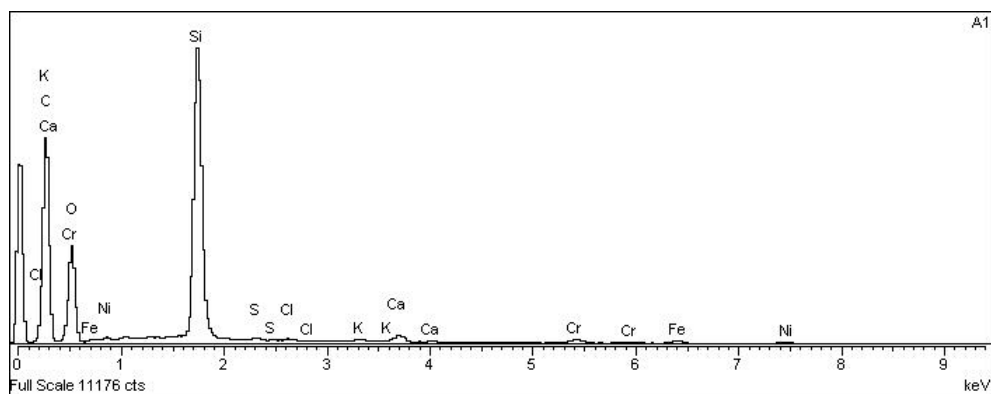


4.4 Surface Analyses

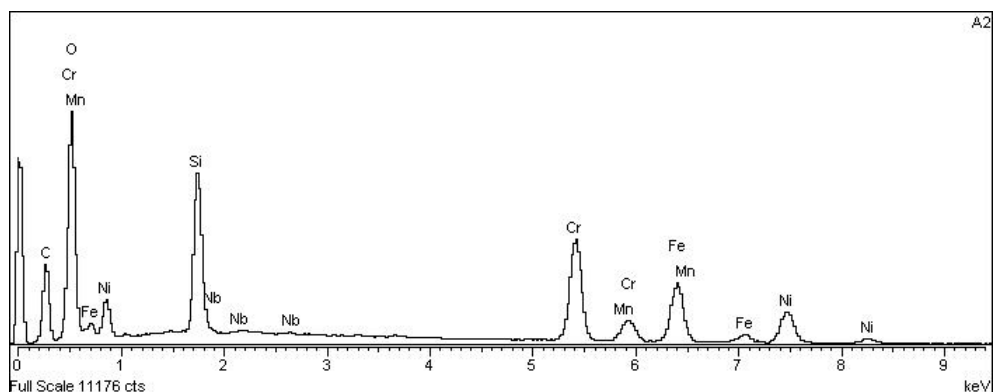
4.4.1 HP Tested at 650°C for 100h

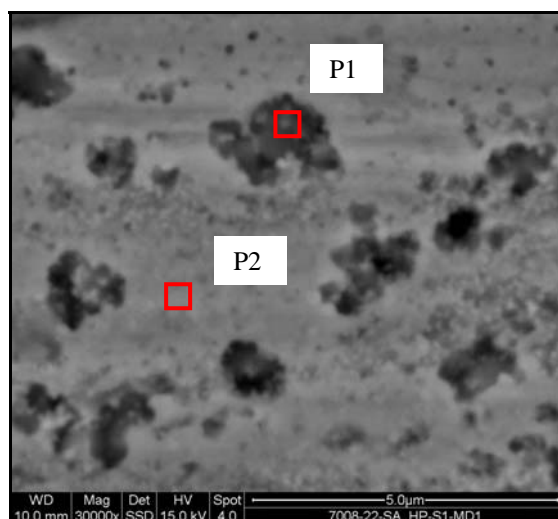


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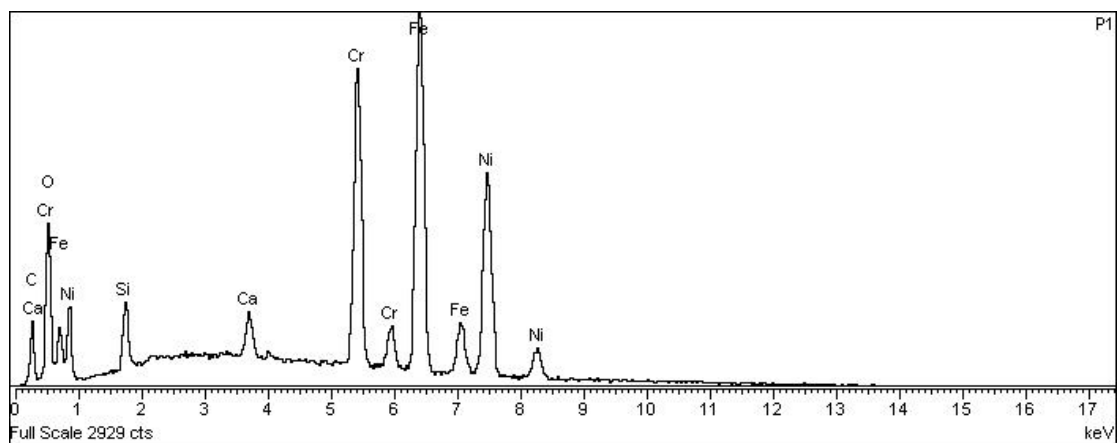


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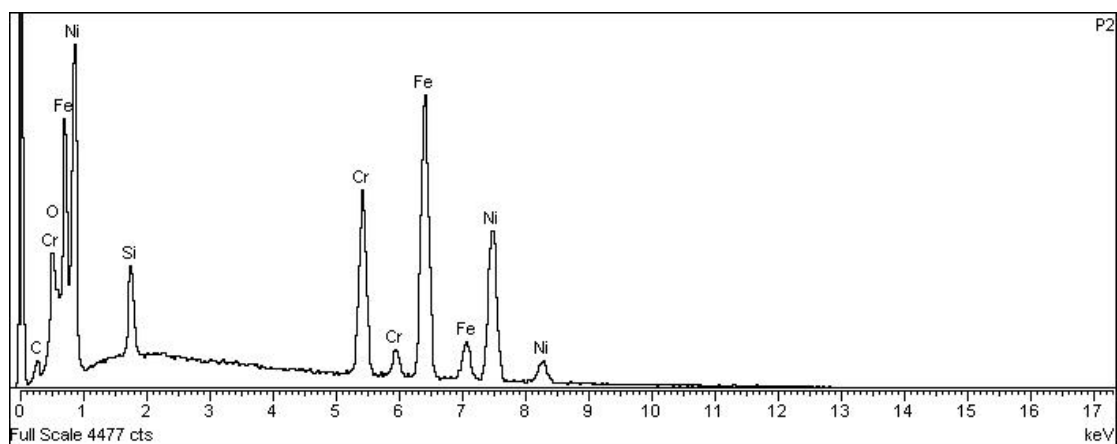




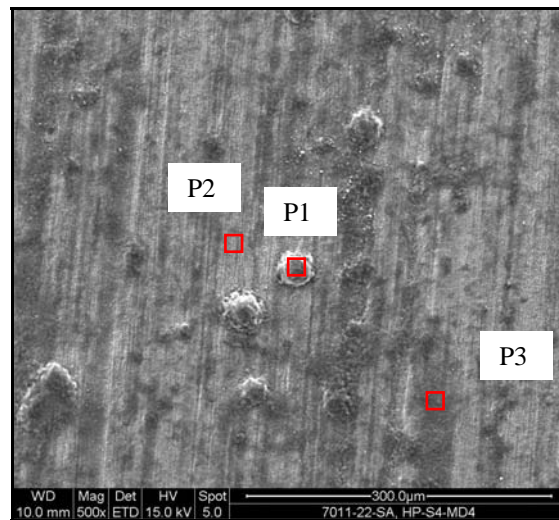
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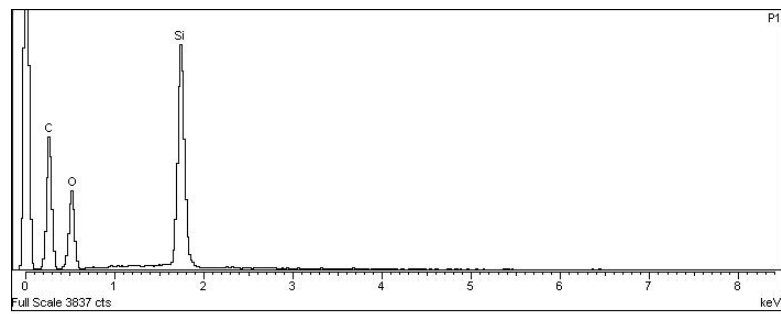
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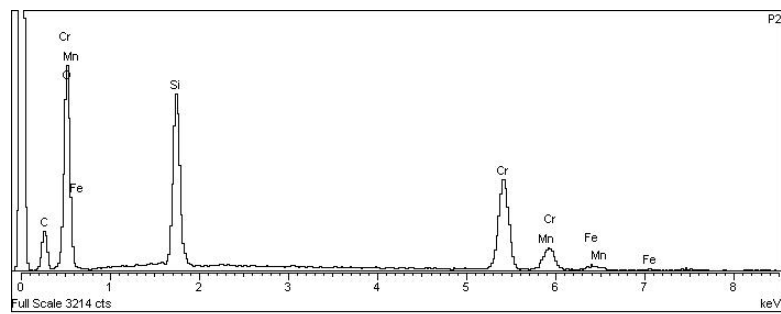
4.4.2 HP Tested at 650°C for 500h



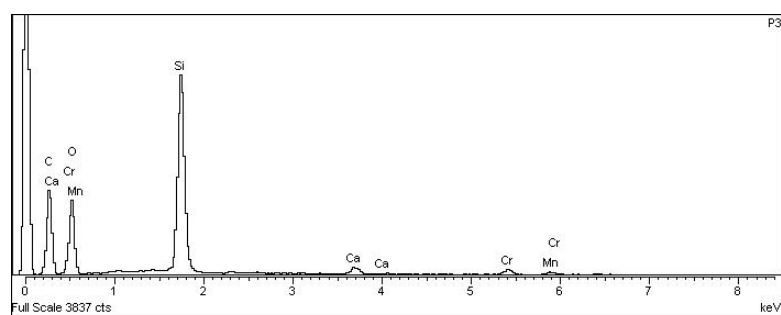
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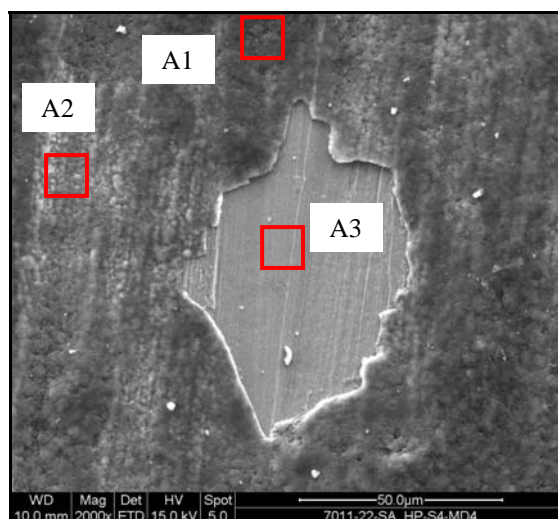


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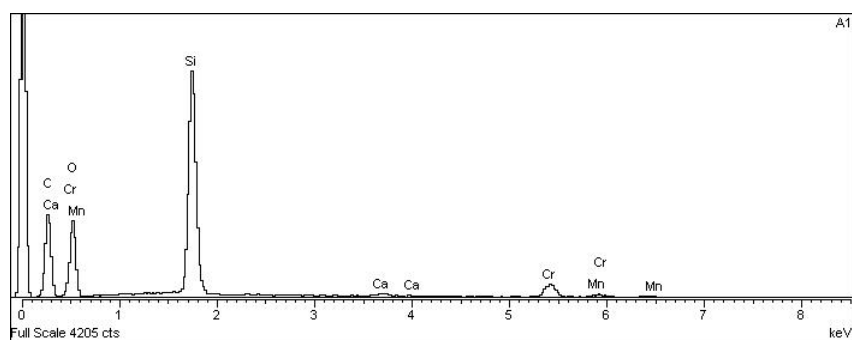


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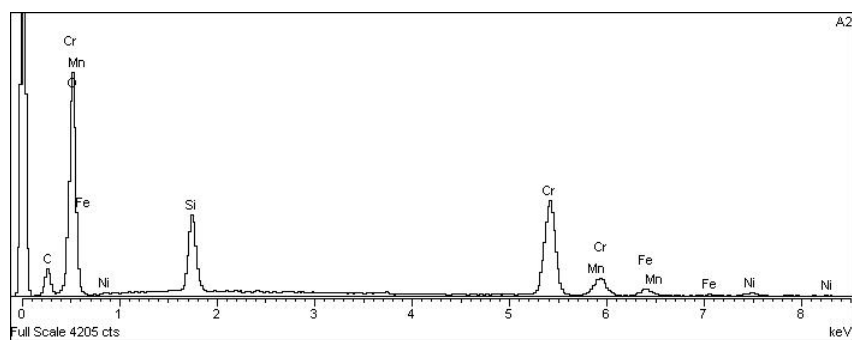




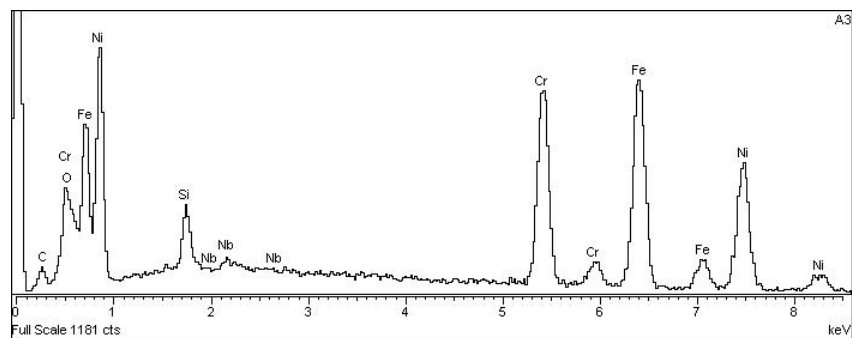
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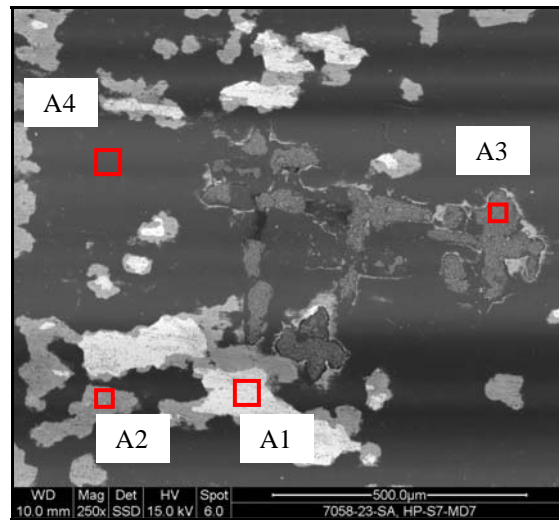
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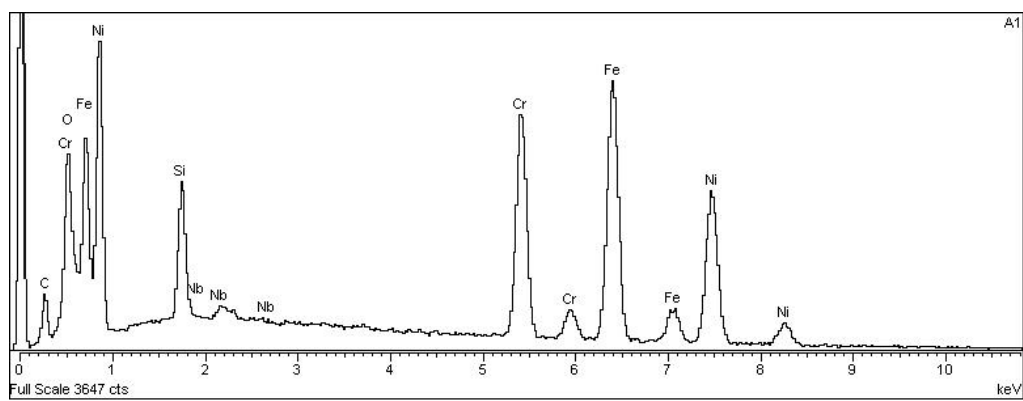
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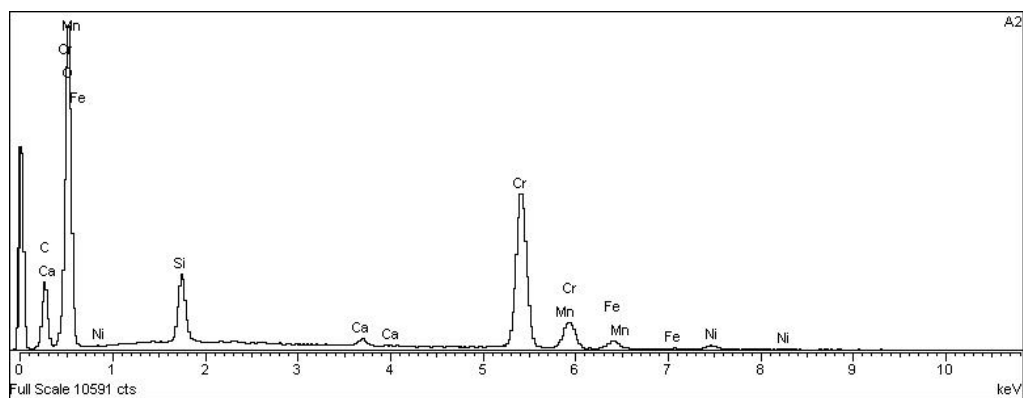
4.4.3 HP Tested at 650°C for 1000h



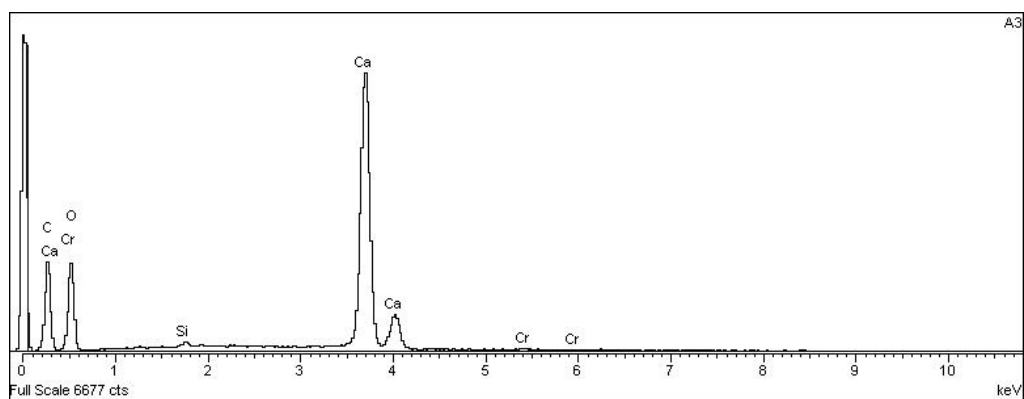
A1



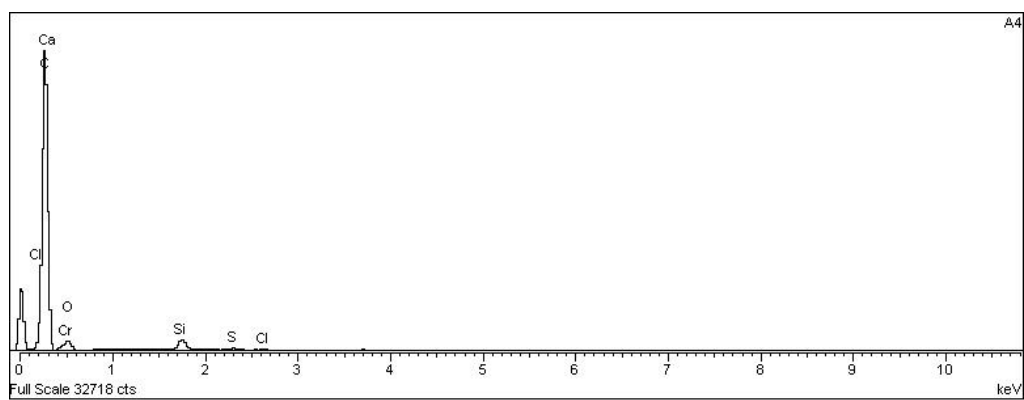
A2

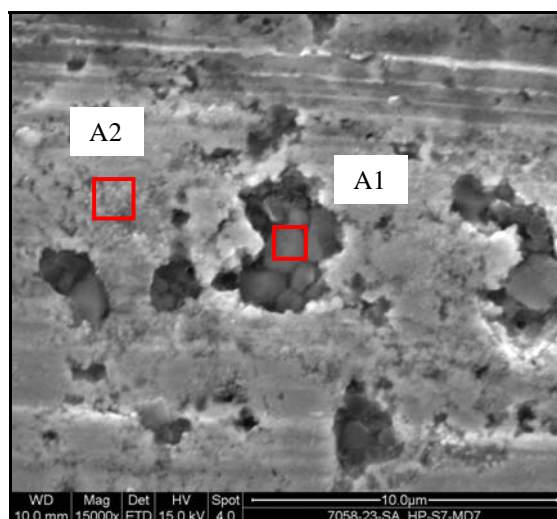


A3

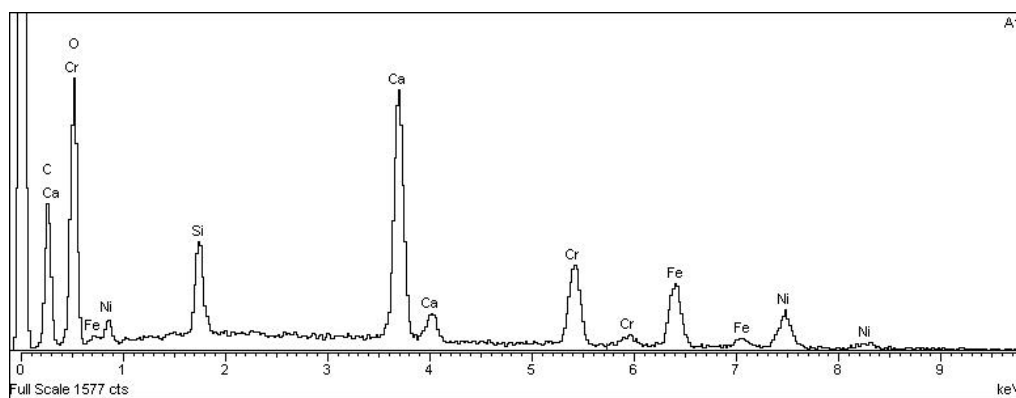


A4

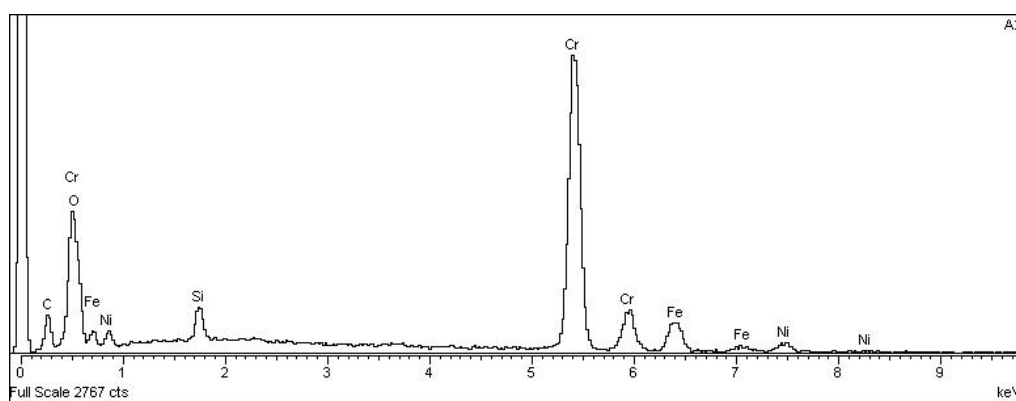




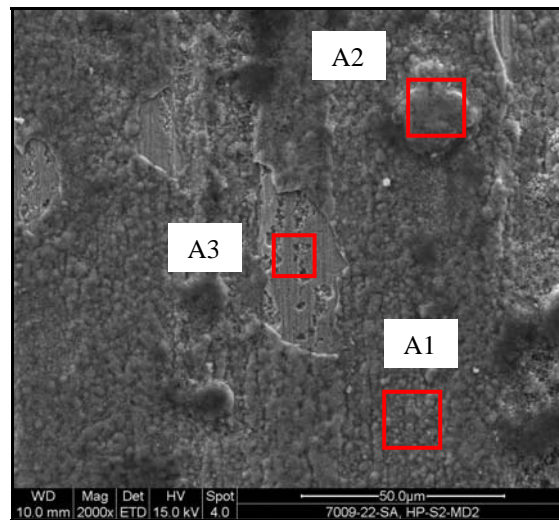
A1



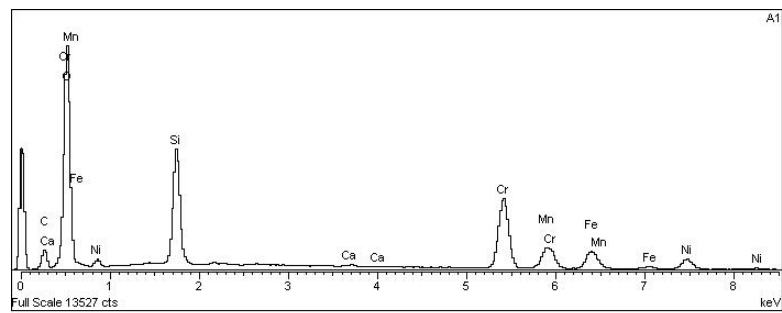
A2



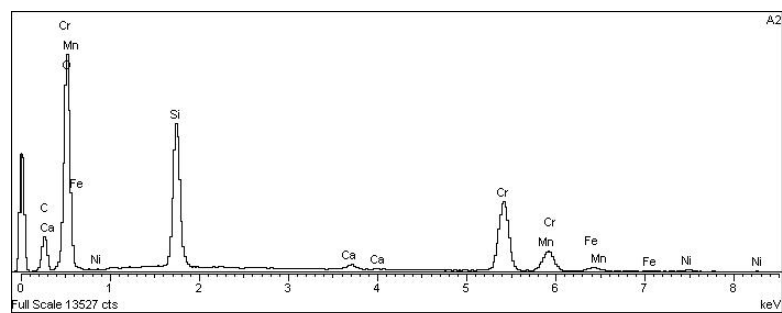
4.4.4 HP Tested at 750°C for 100h



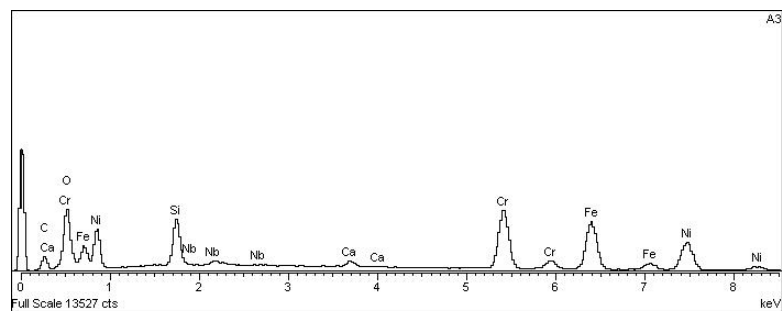
A1



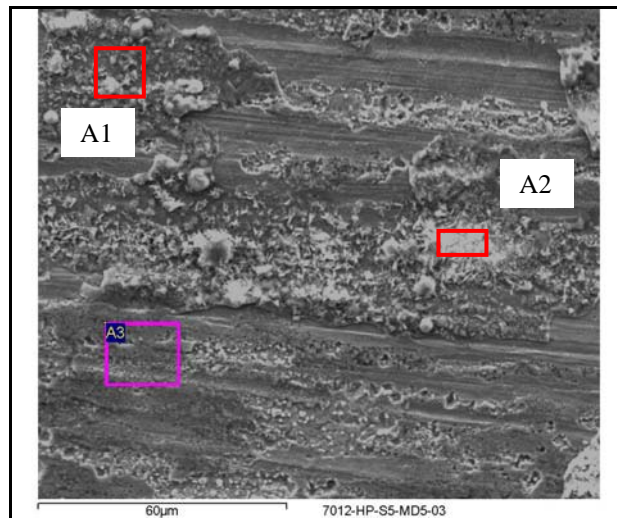
A2



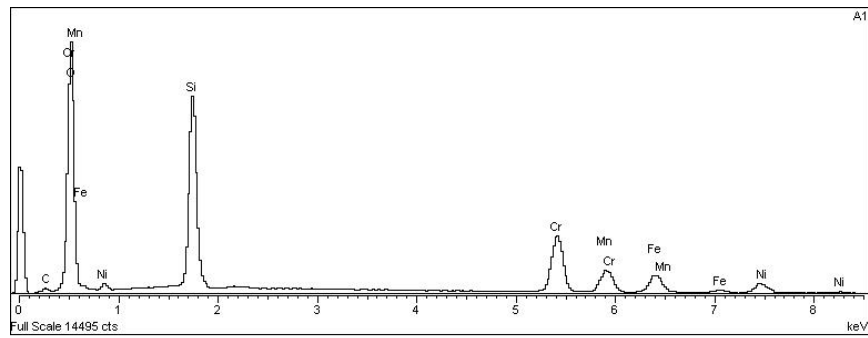
A3



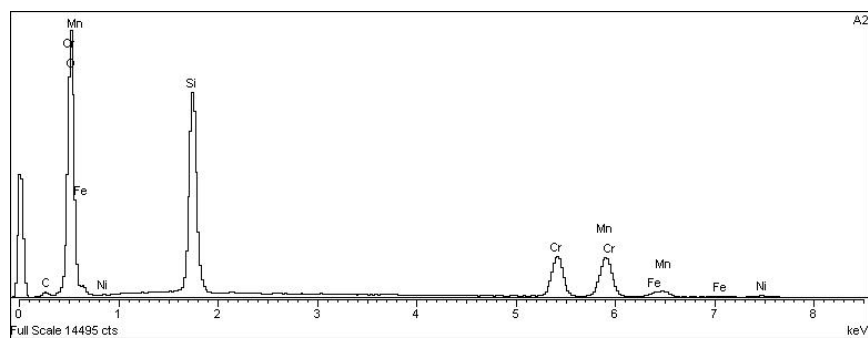
4.4.5 HP Tested at 750°C for 500h



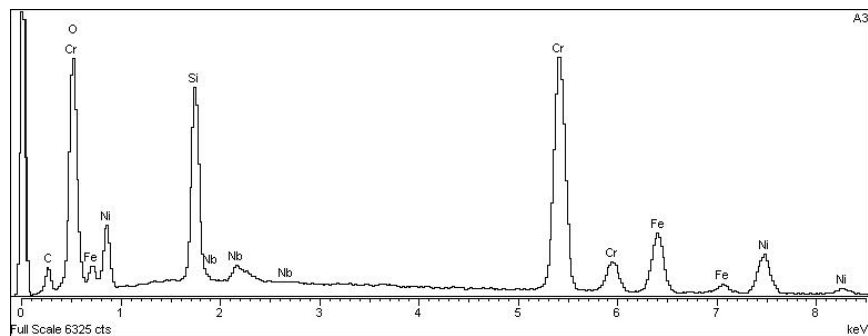
A1

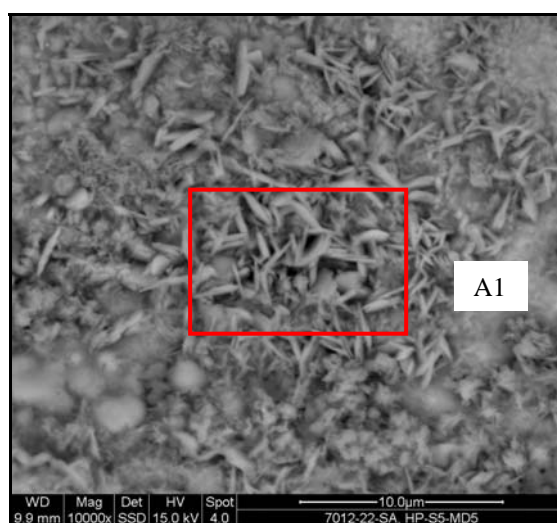


A2

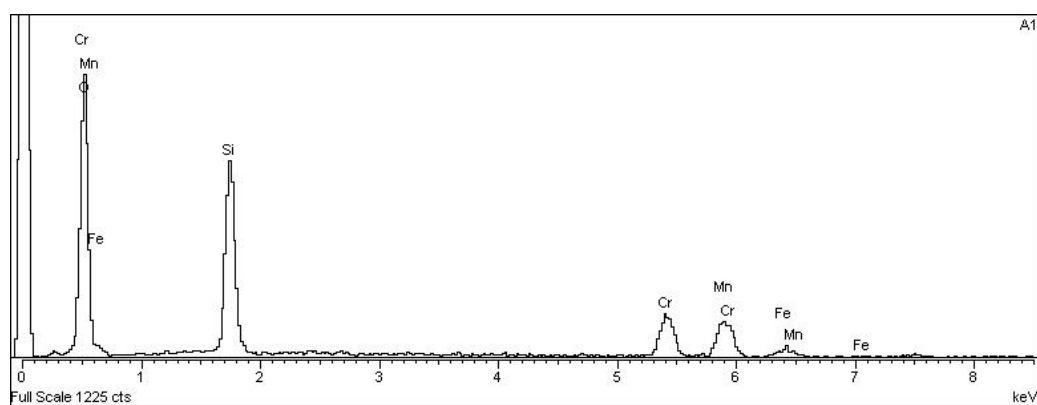


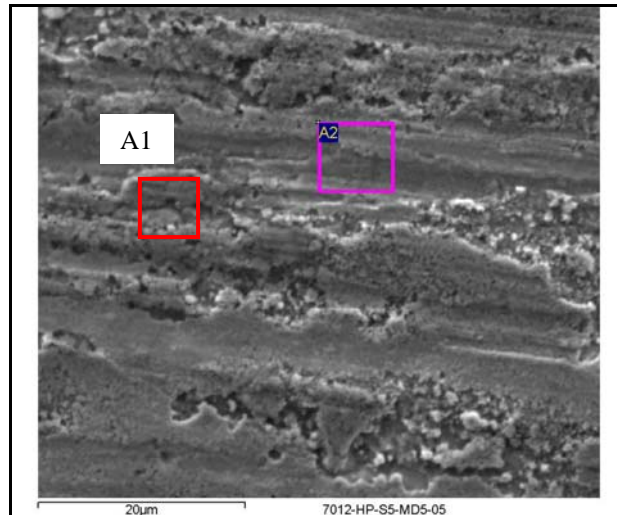
A3



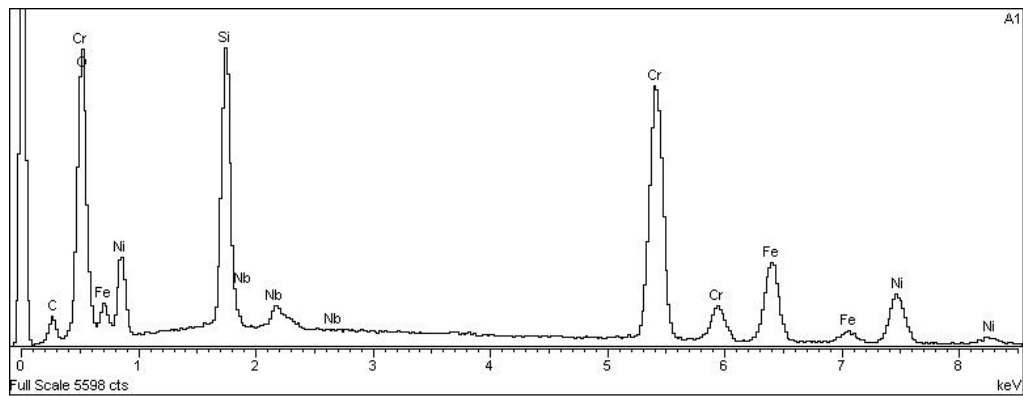


A1

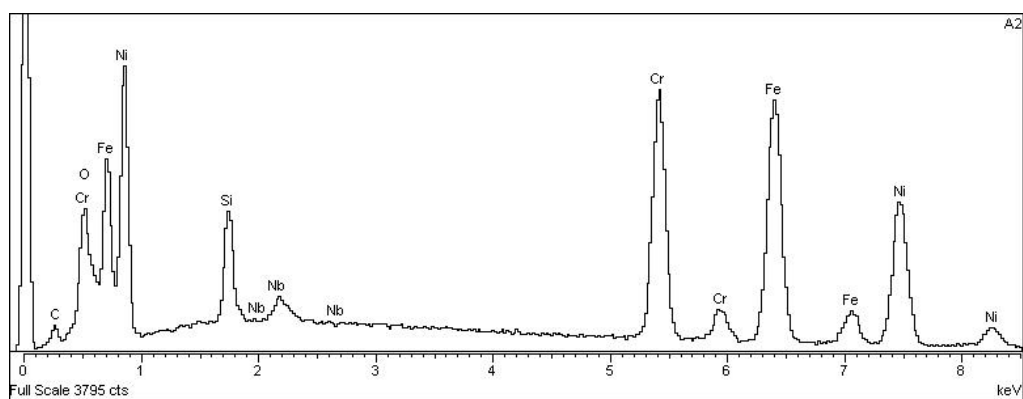




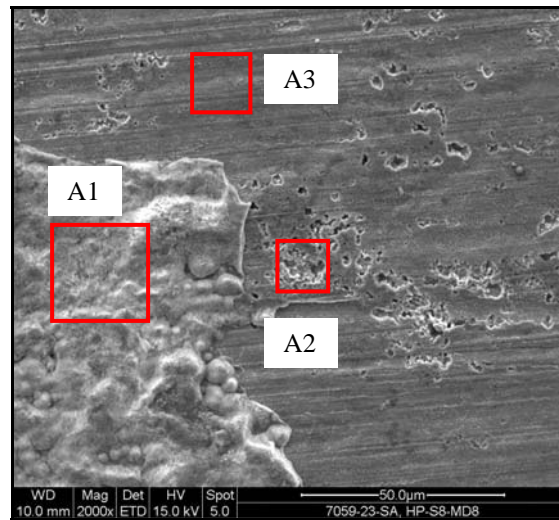
A1



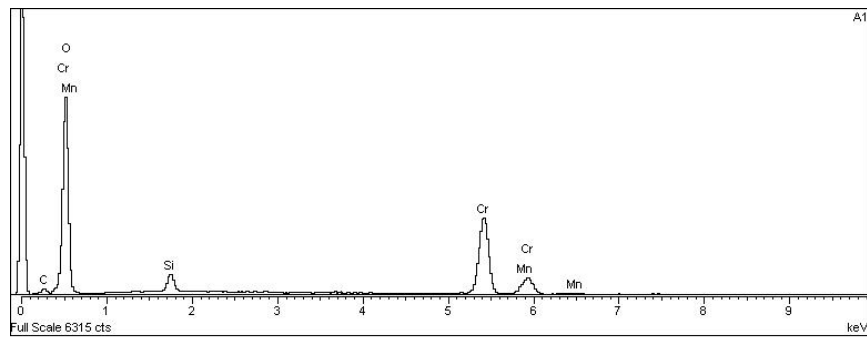
A2



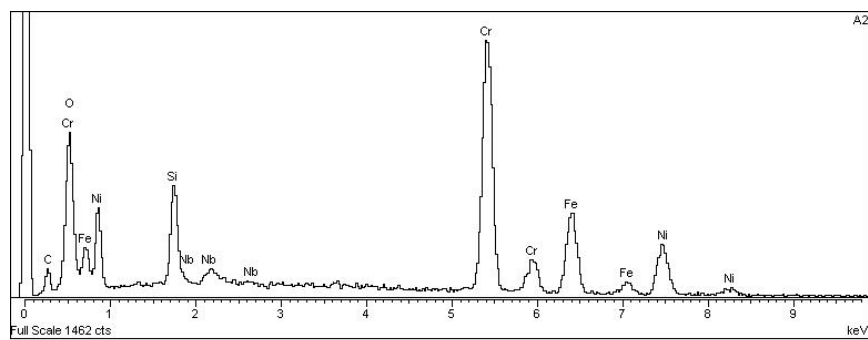
4.4.6 HP Tested at 750°C for 1000h



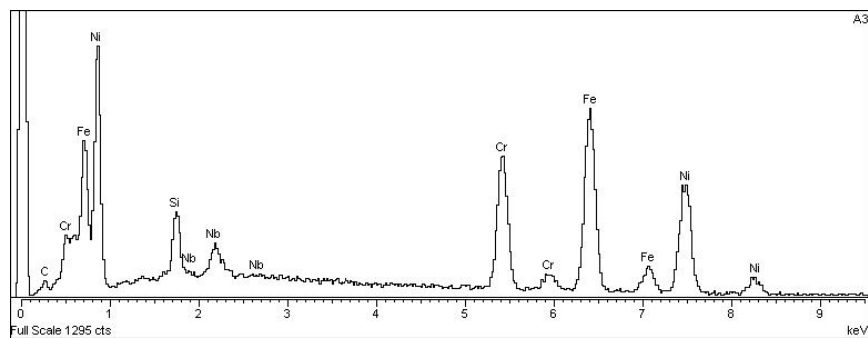
A1

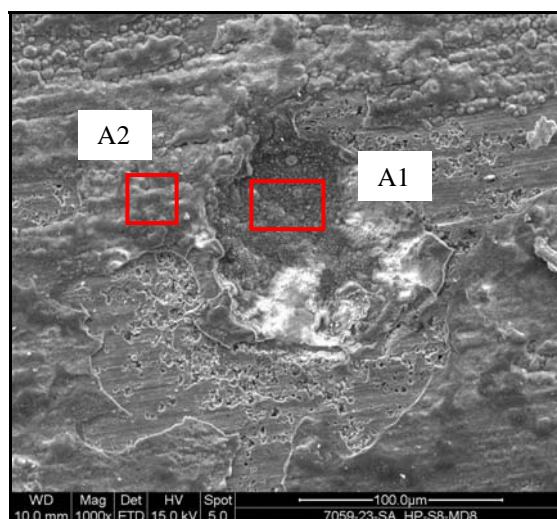


A2

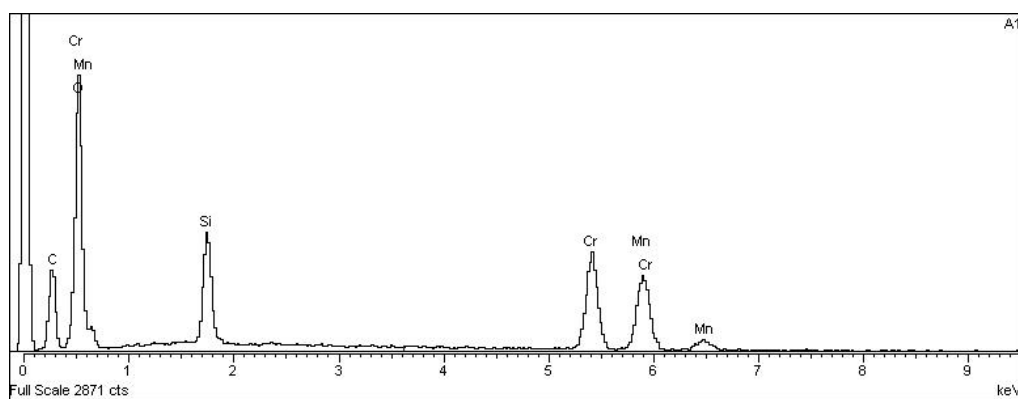


A3

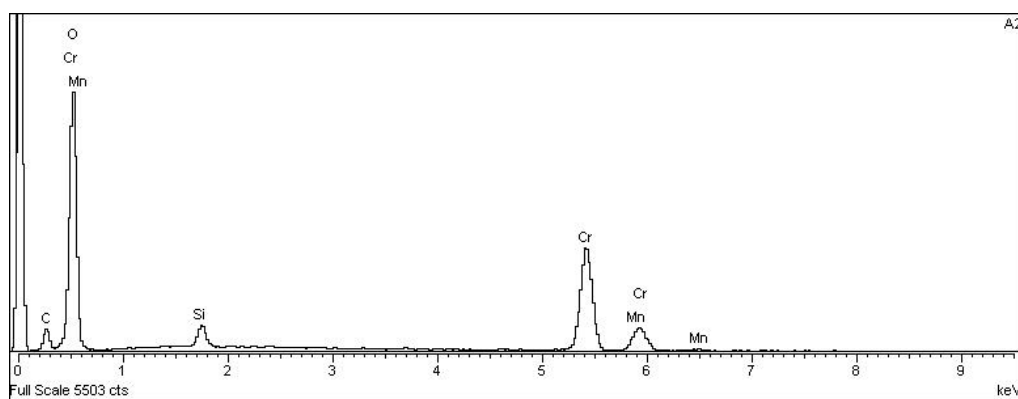




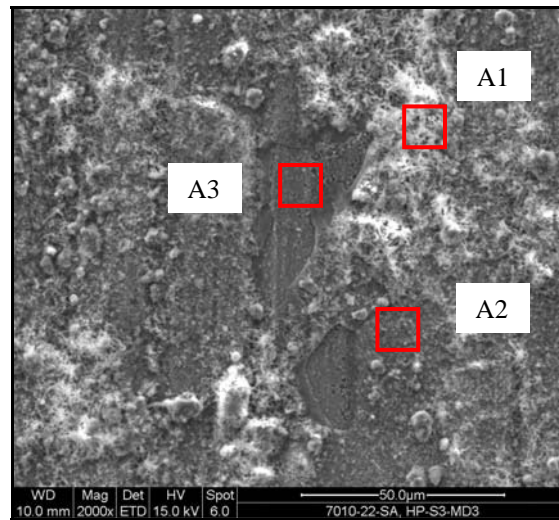
A1



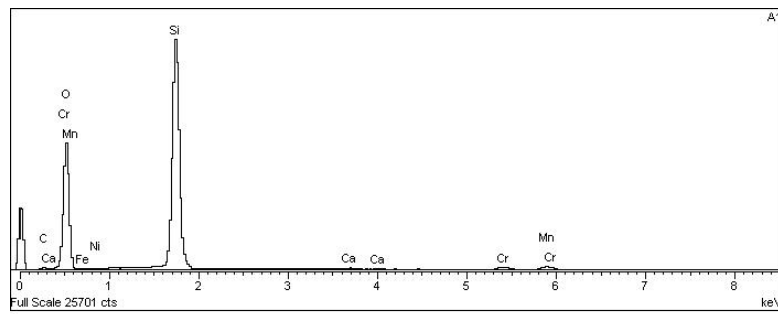
A2



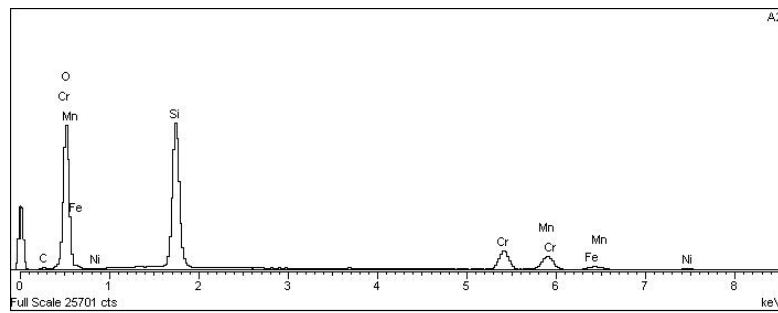
4.4.7 HP Tested at 850°C for 100h



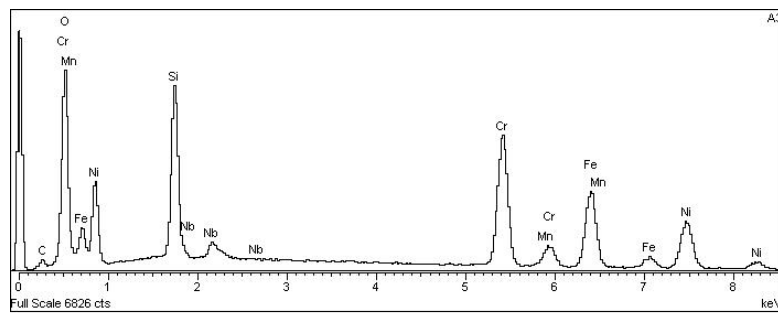
A1

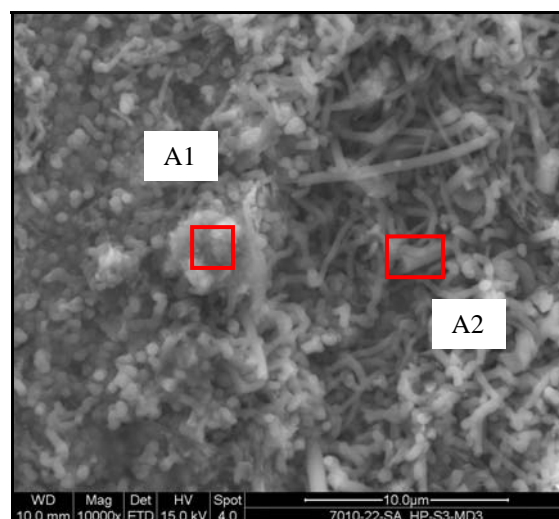


A2

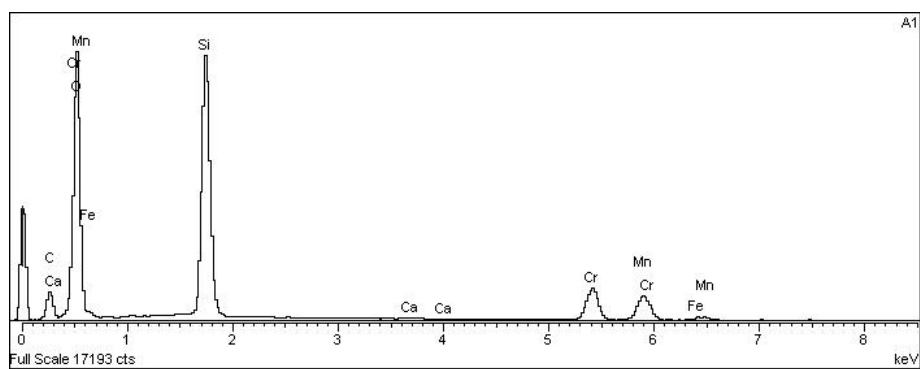


A3

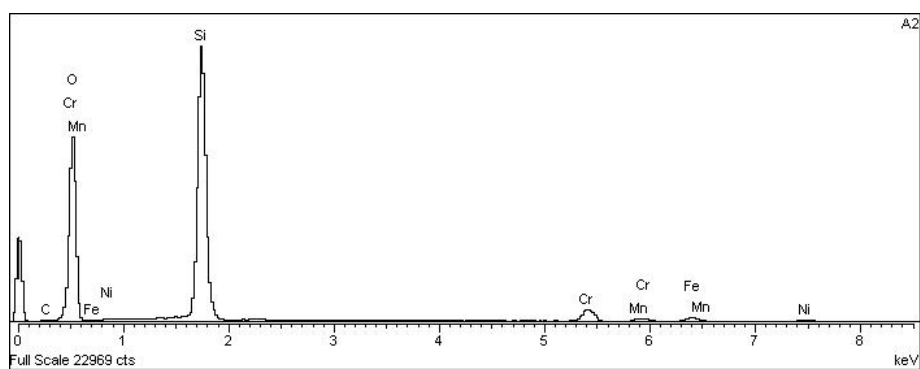


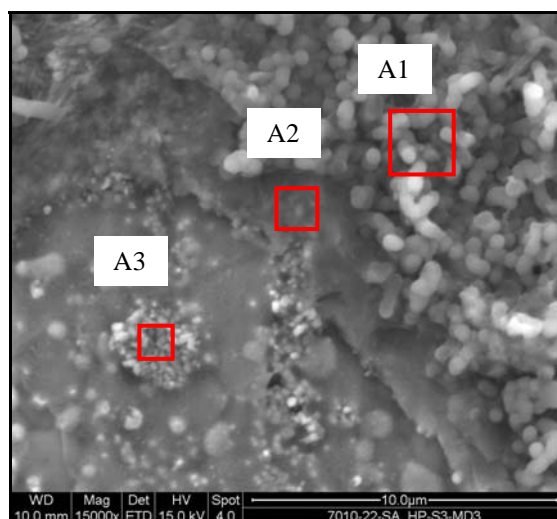


A1

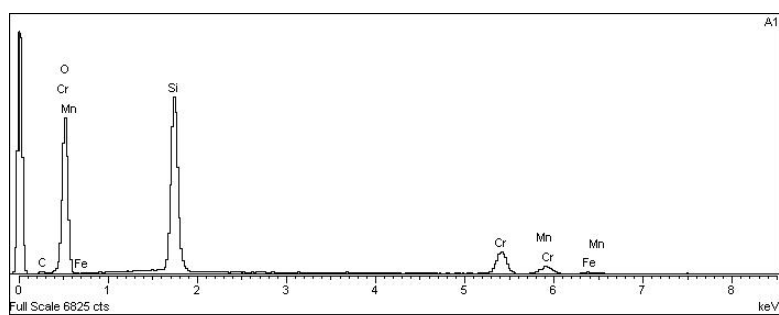


A2

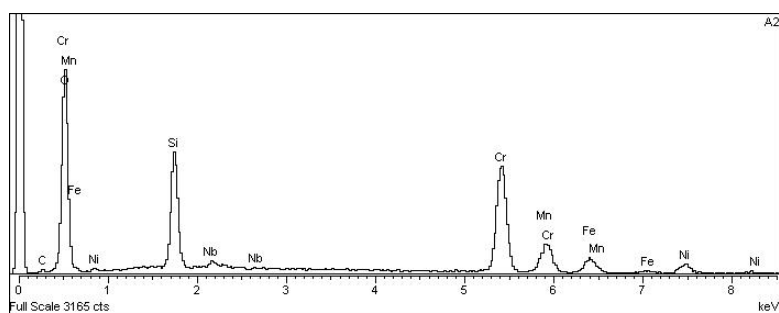




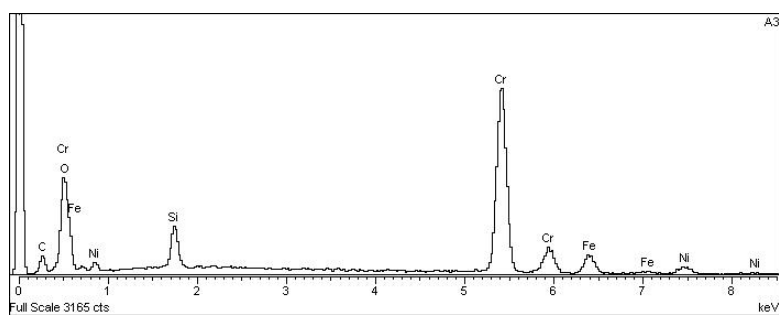
A1



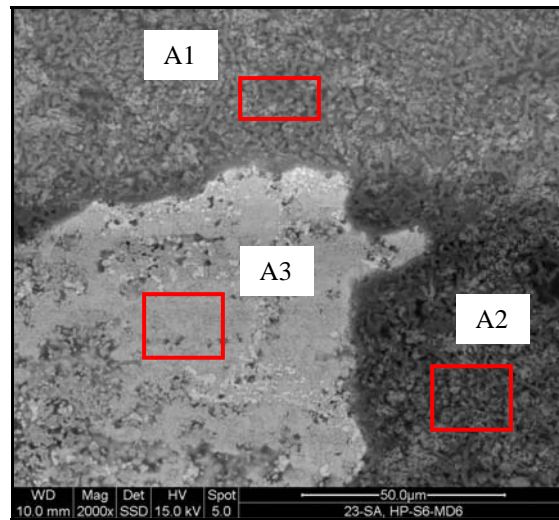
A2



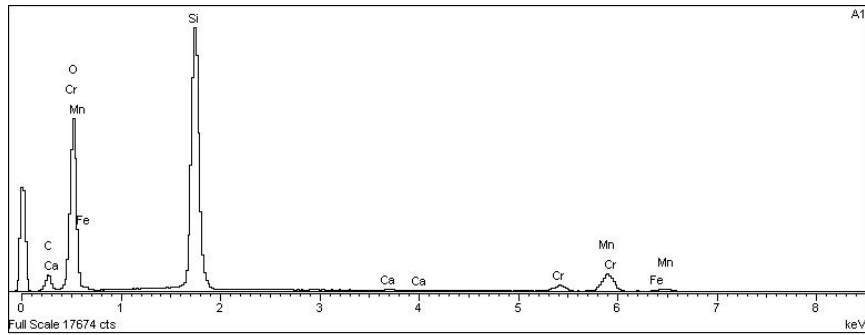
A3



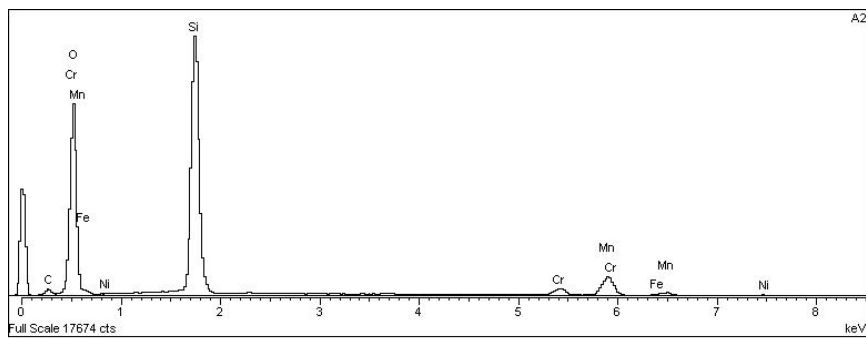
4.4.8 HP Tested at 850°C for 500h



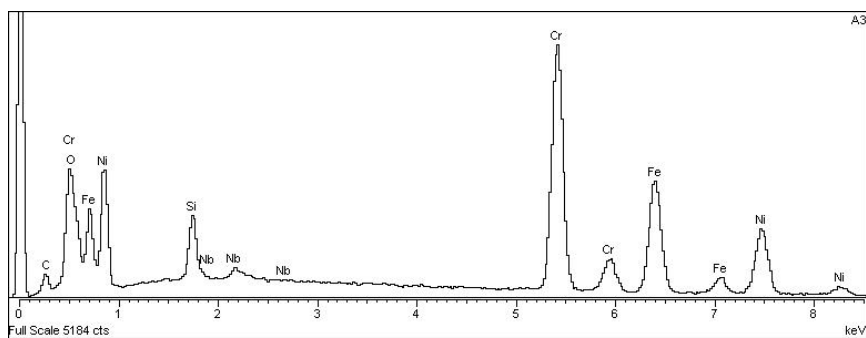
A1

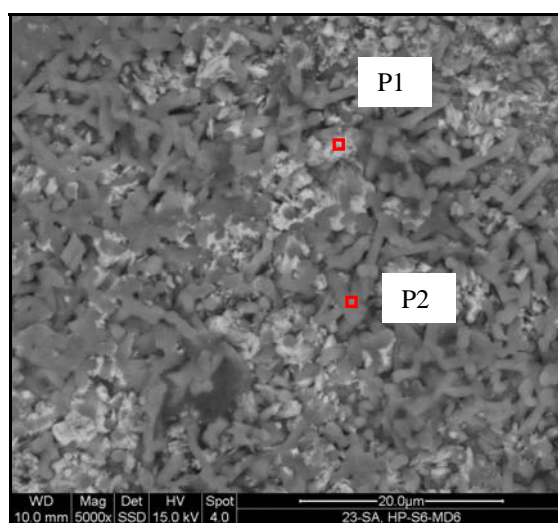


A2

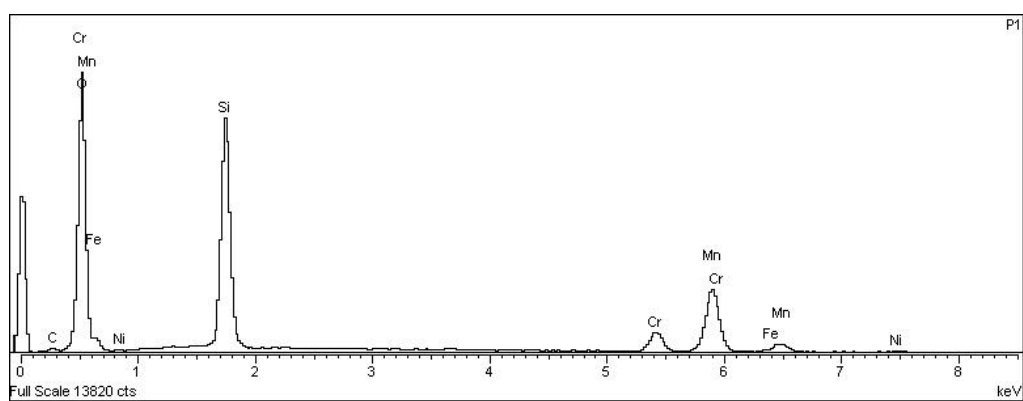


A3

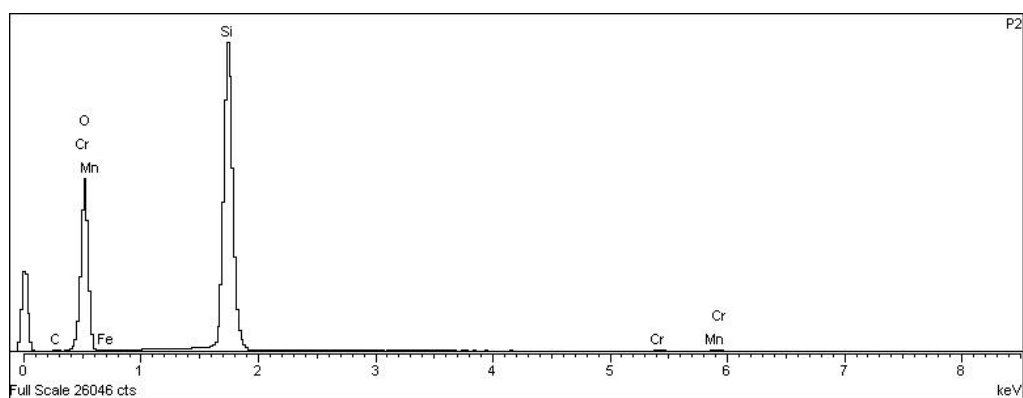


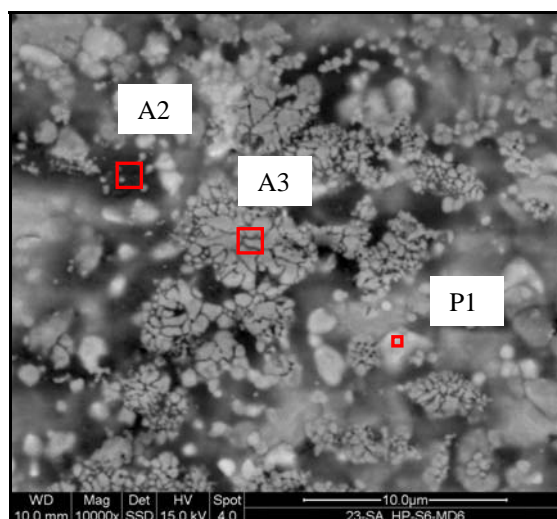


P1

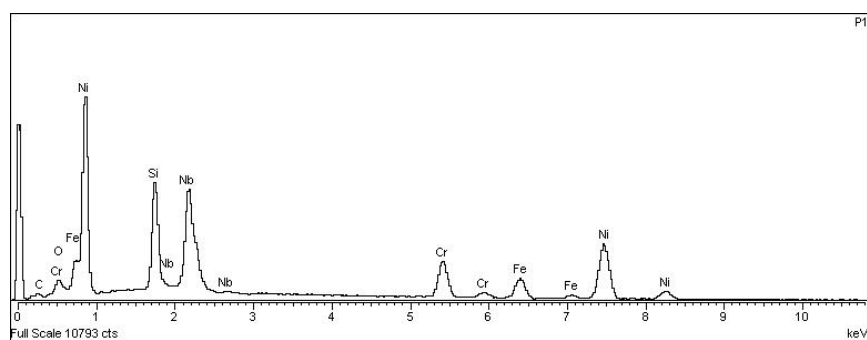


P2

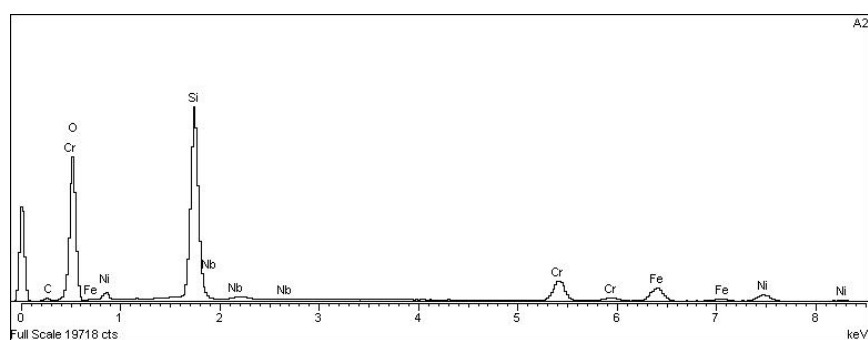




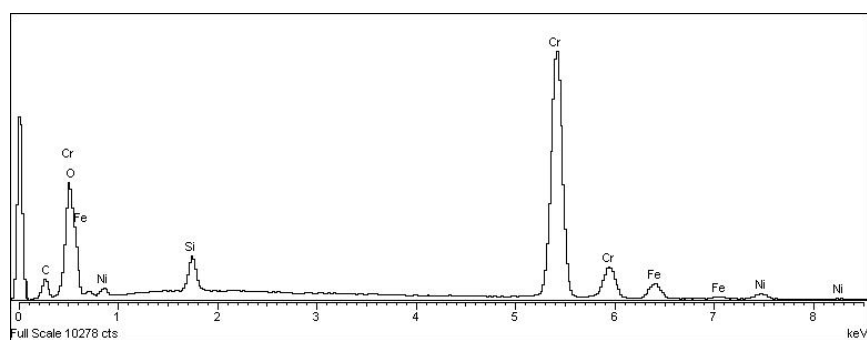
P1



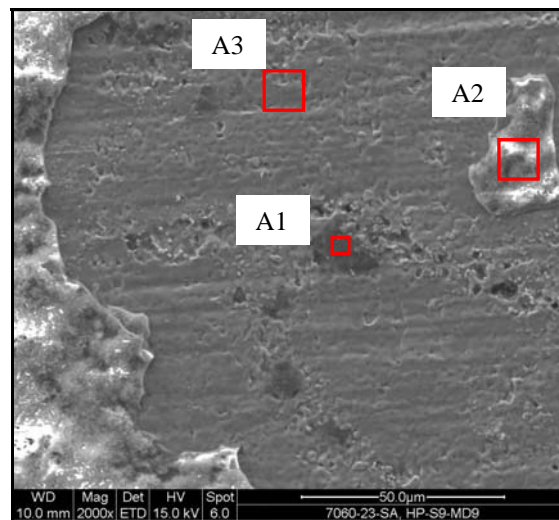
A2



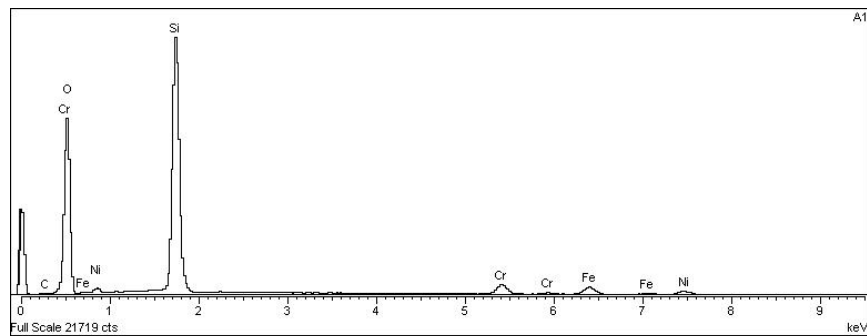
A3



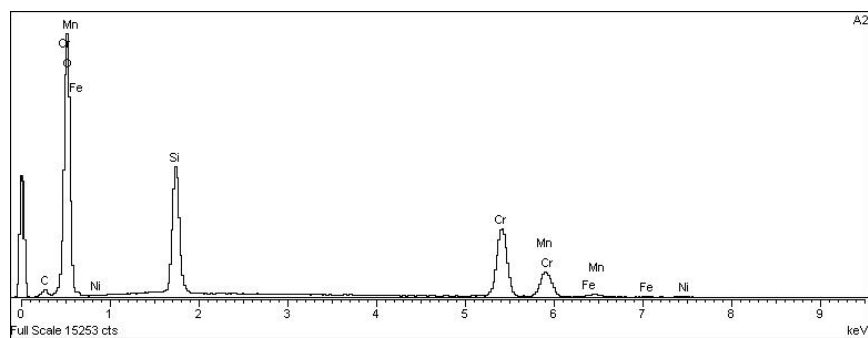
4.4.9 HP Tested at 850°C for 1000h



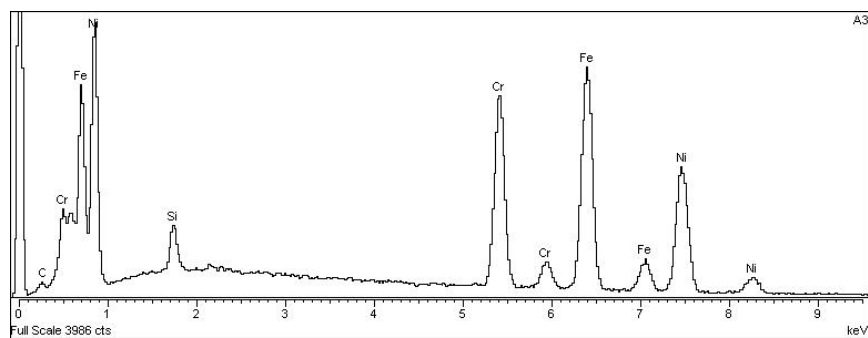
A1

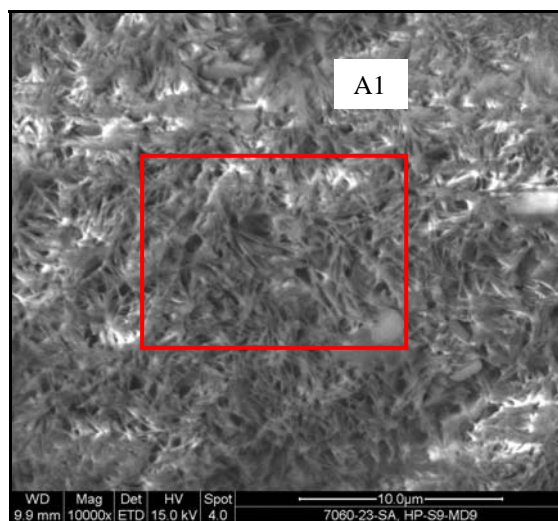


A2

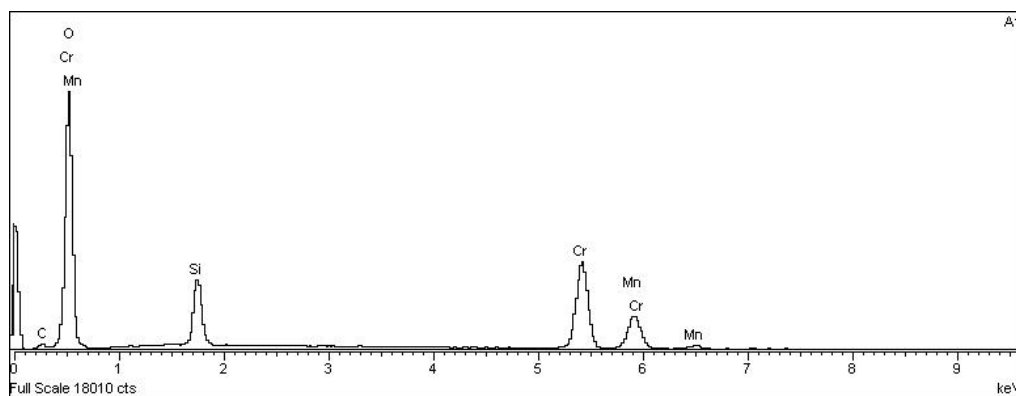


A3



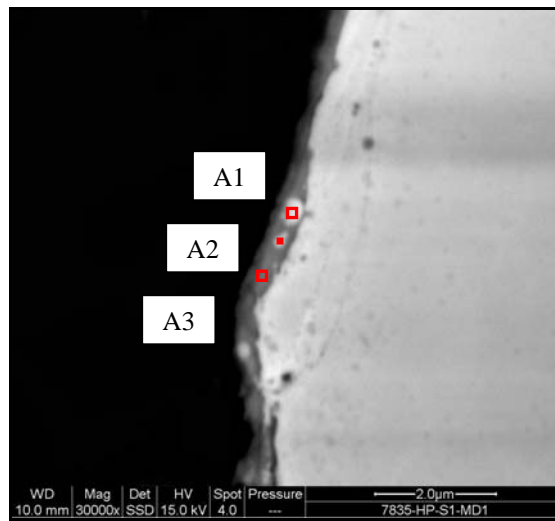


A1

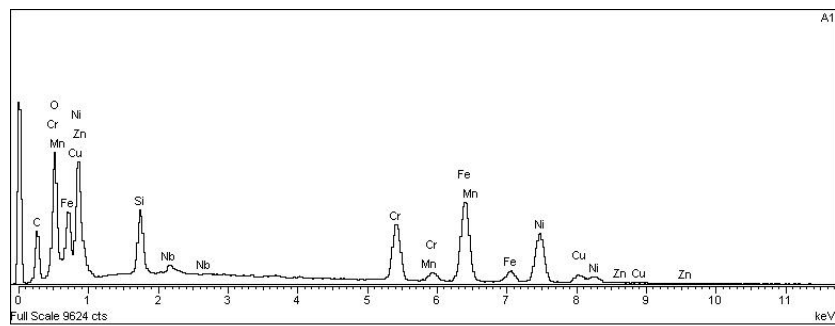


4.5 Metallographic Examination

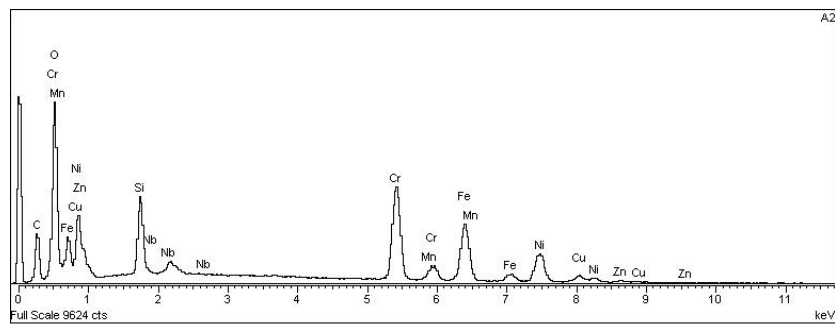
4.5.1 HP Tested at 650°C for 100h



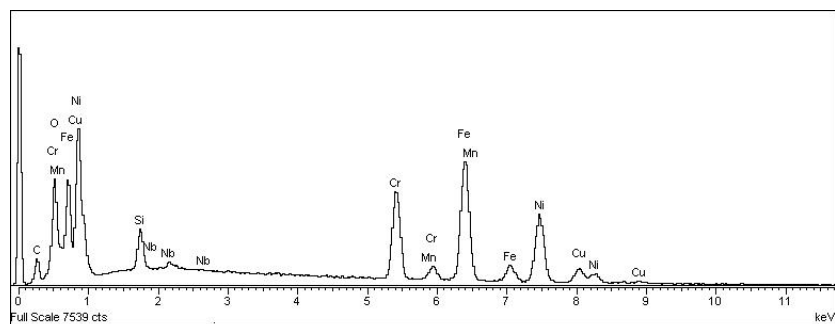
A1

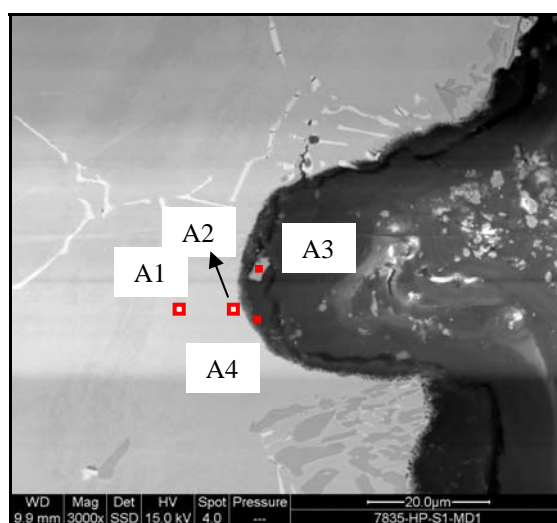


A2

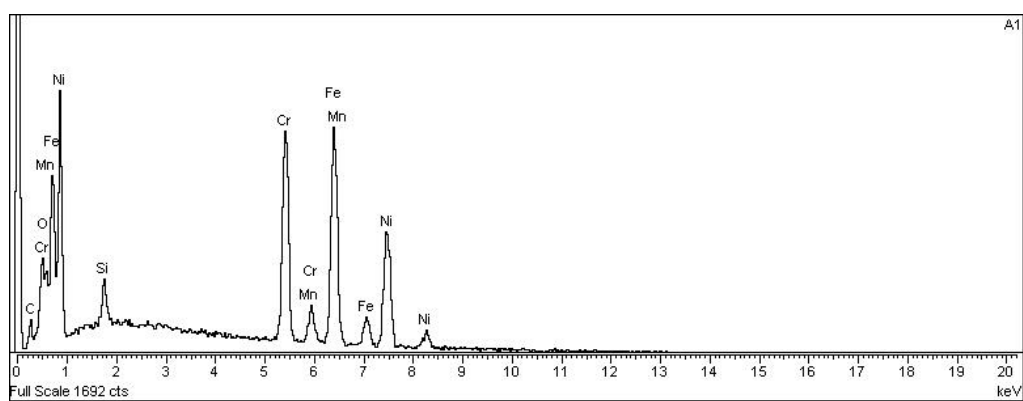


A3

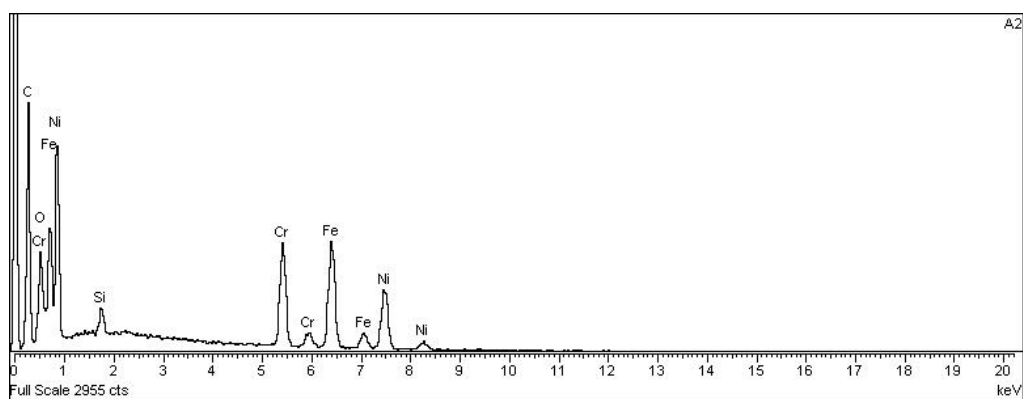




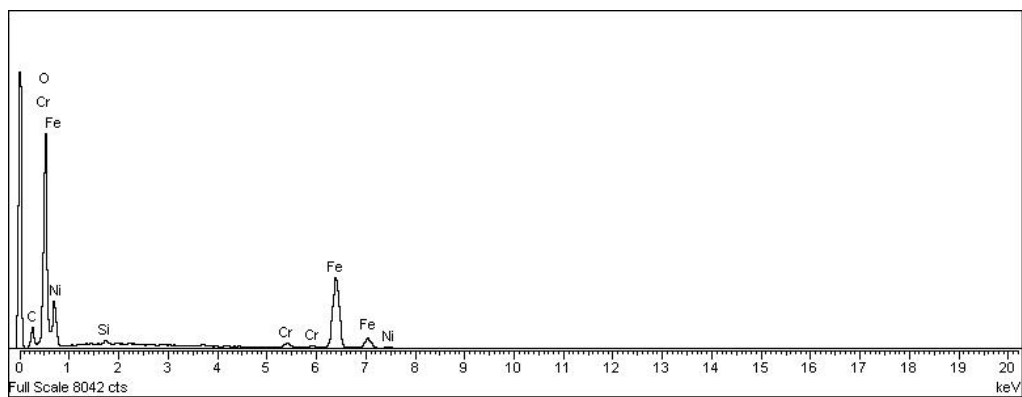
A1



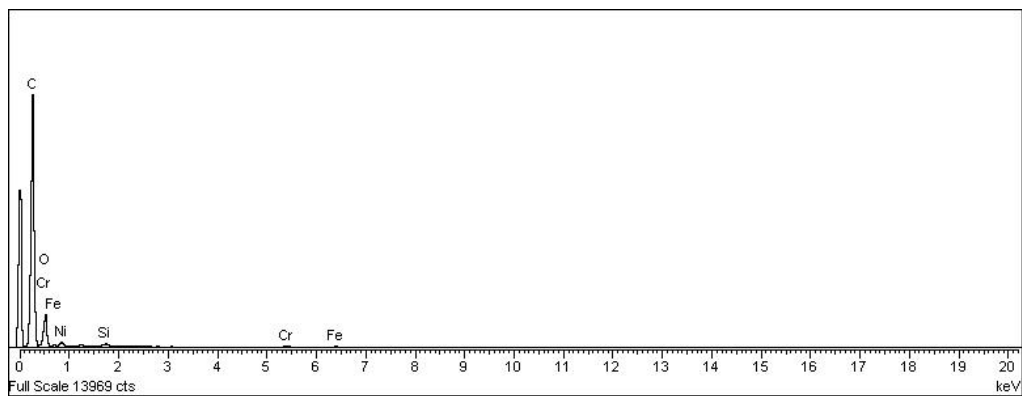
A2



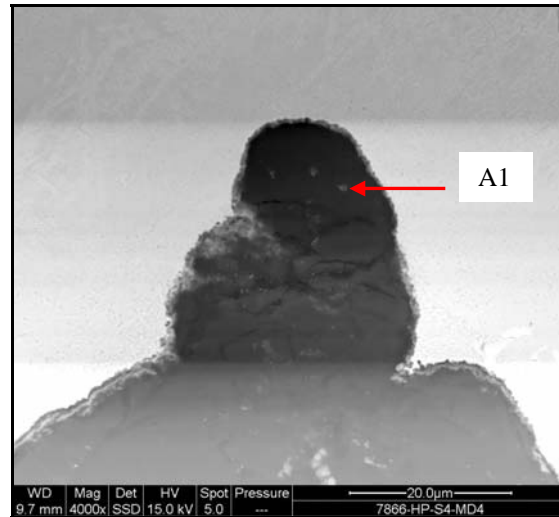
A3



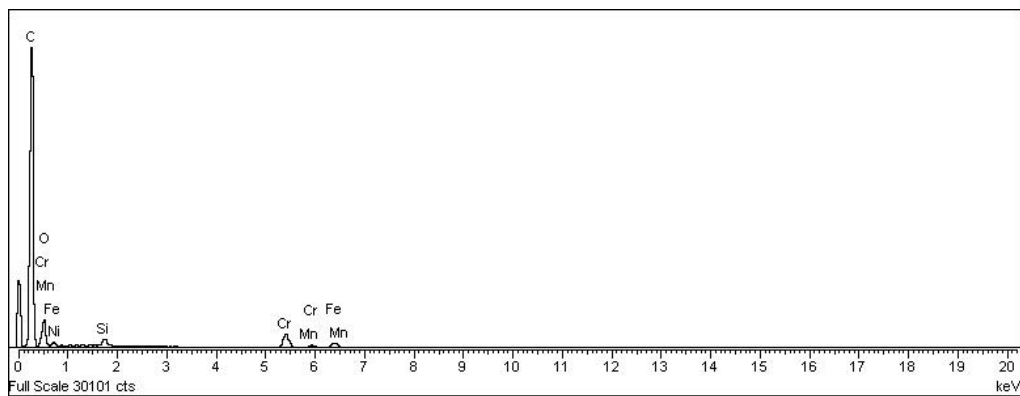
A4

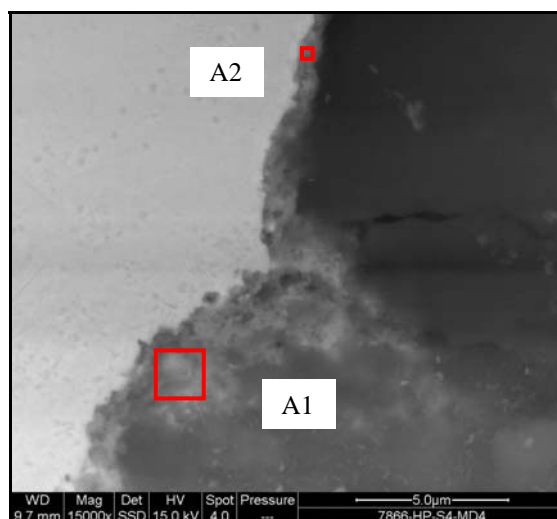


4.5.2 HP Tested at 650°C for 500h

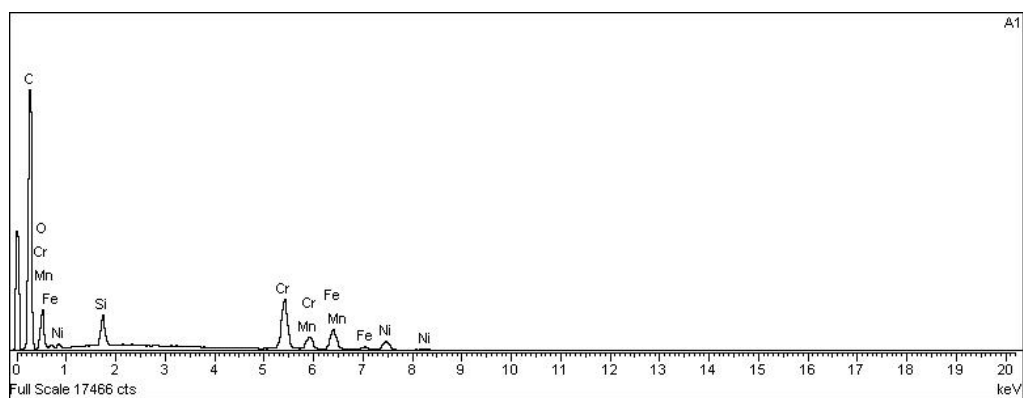


A1

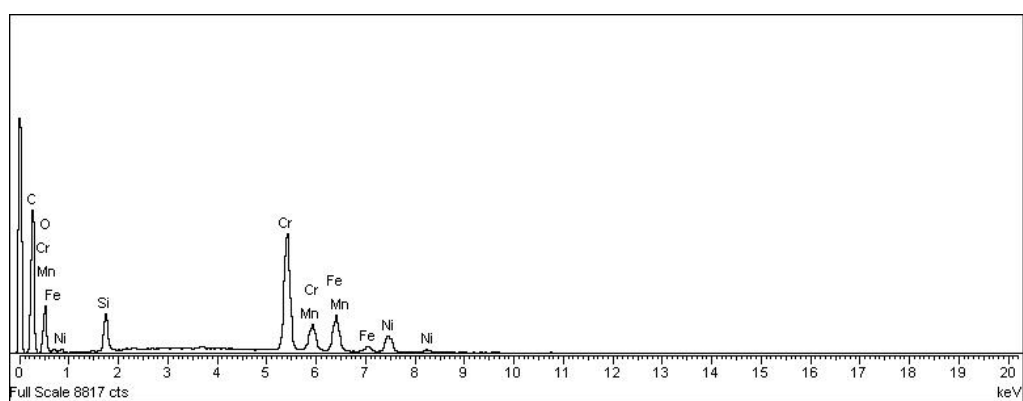




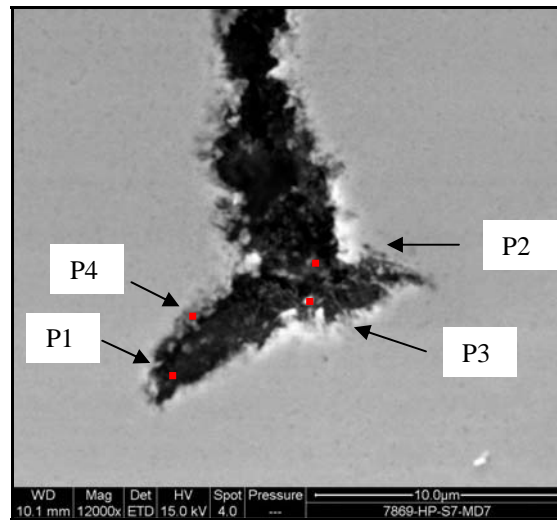
A1



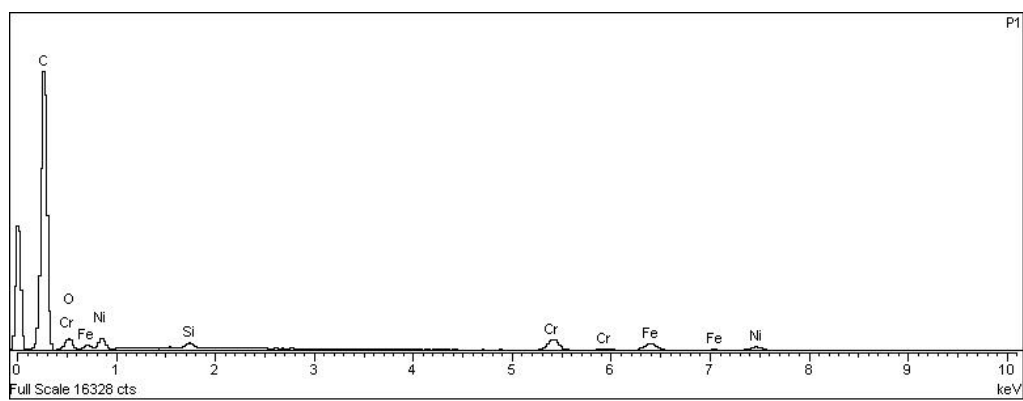
A2



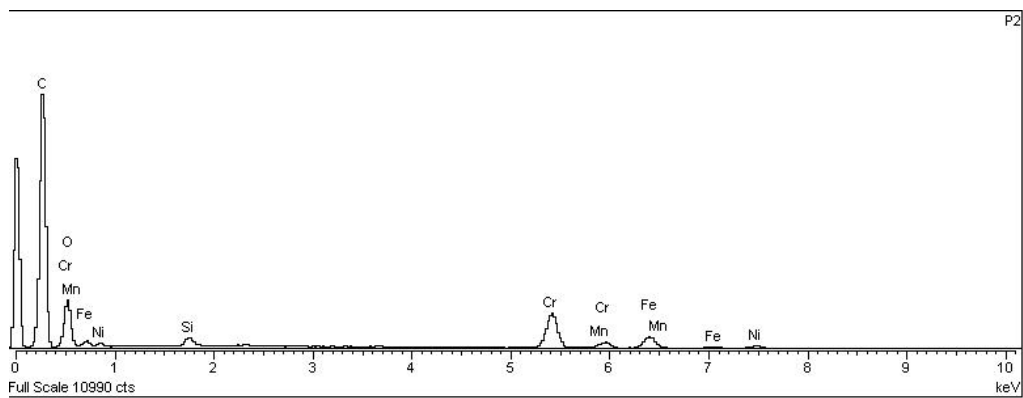
4.5.3 HP Tested at 650°C for 1000h



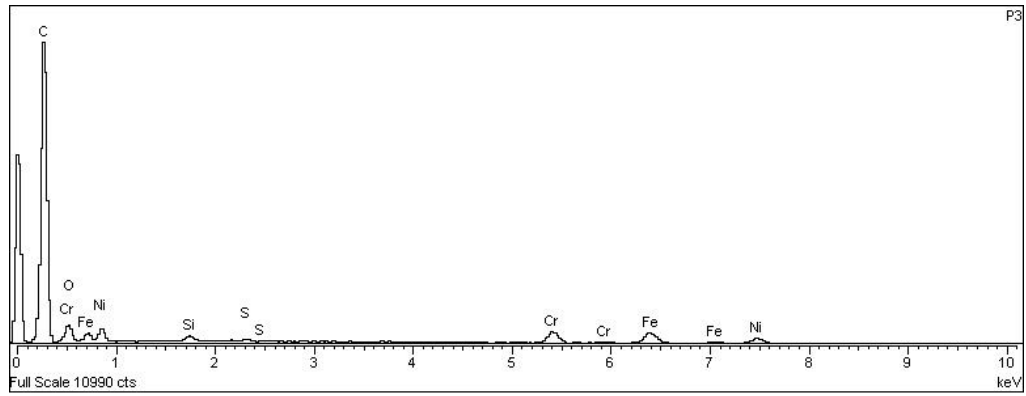
P1



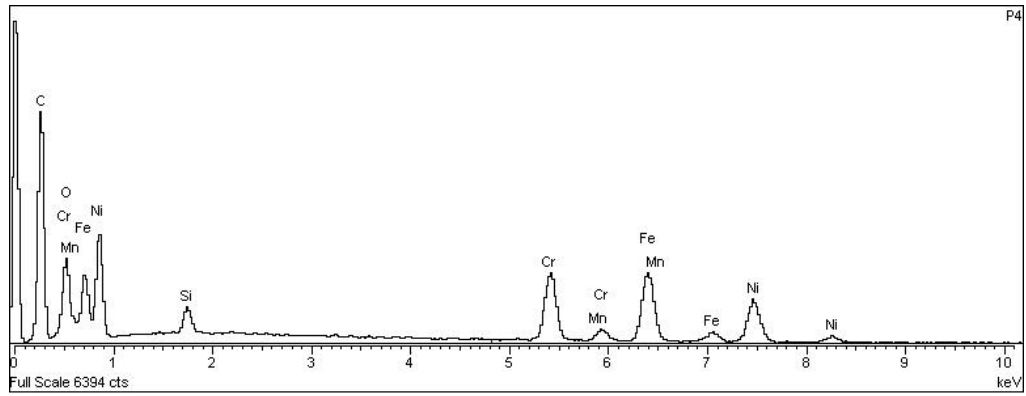
P2



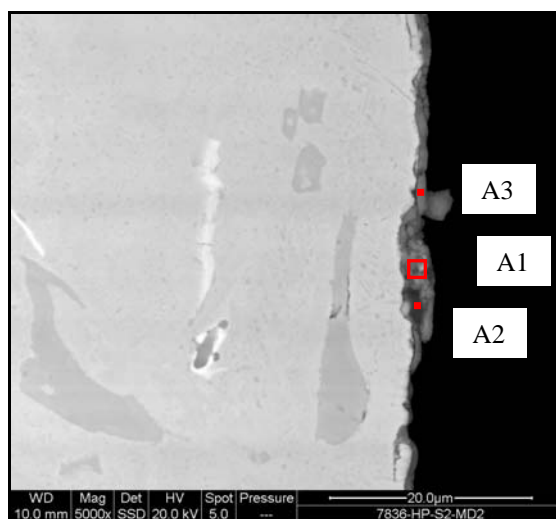
P3



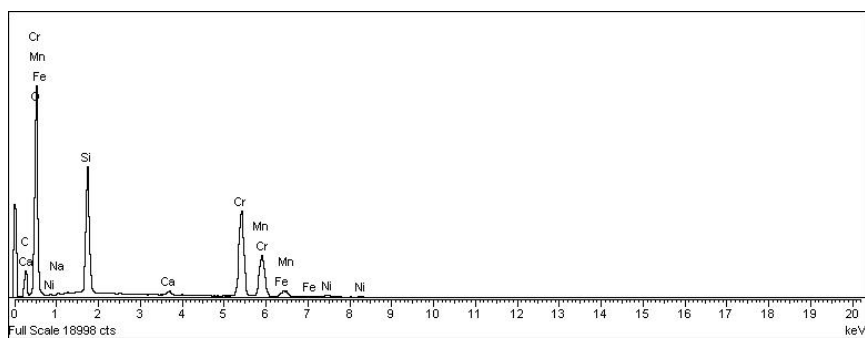
P4



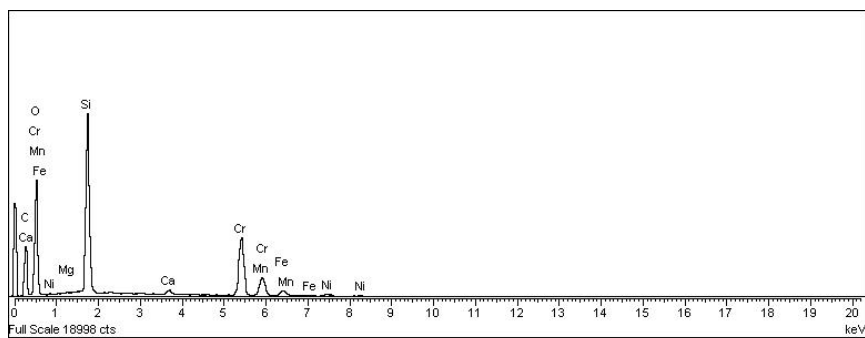
4.5.4 HP Tested at 750°C for 100h



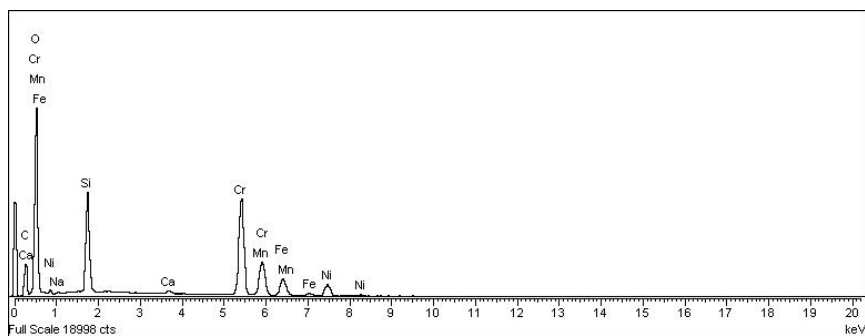
A1

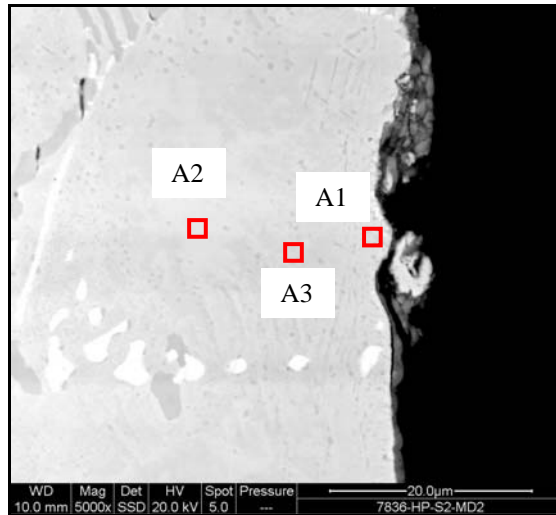


A2

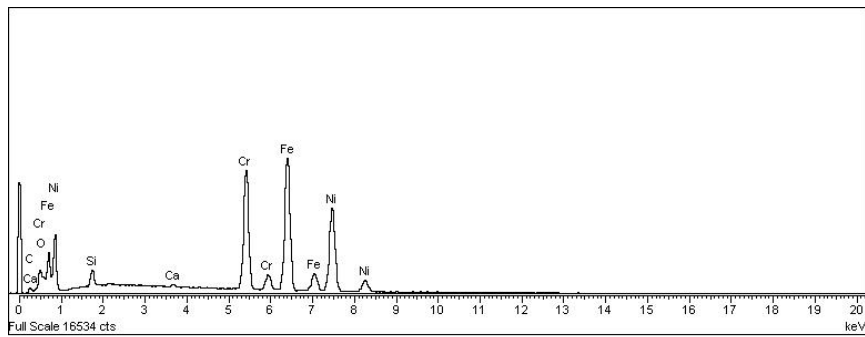


A3

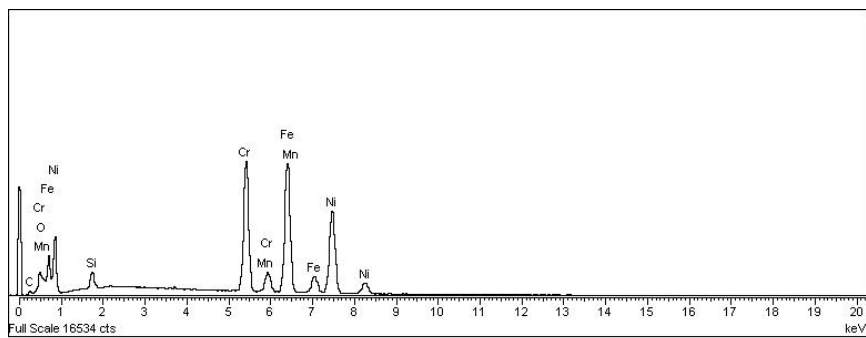




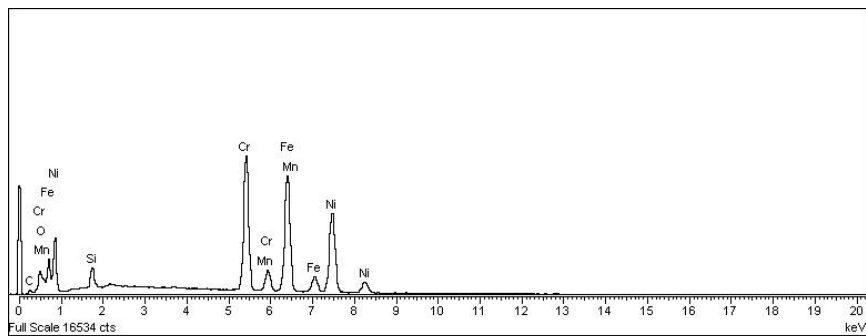
A1

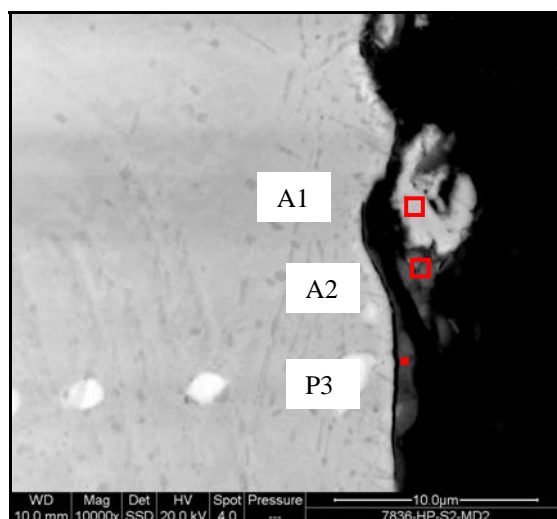


A2

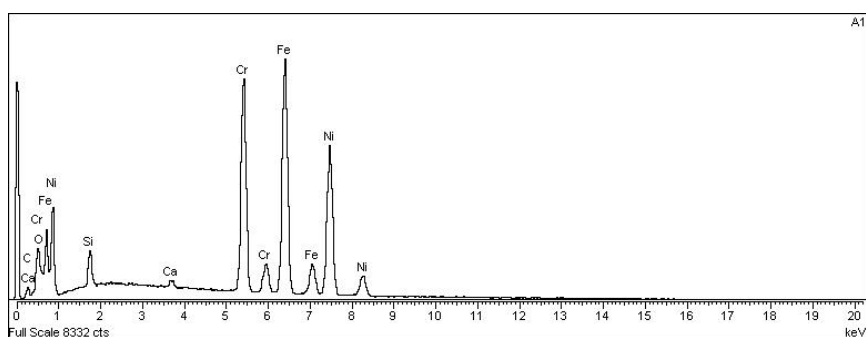


A3

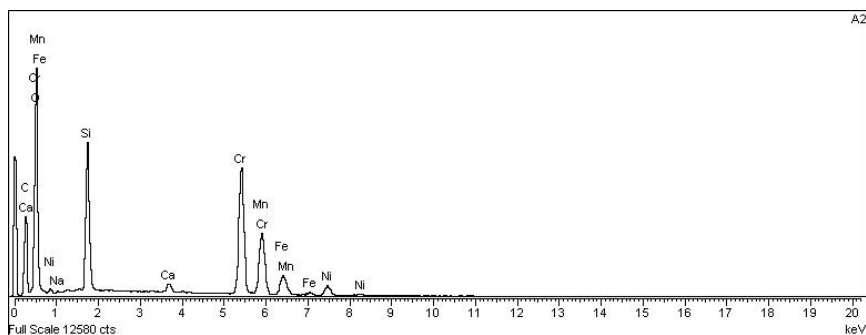




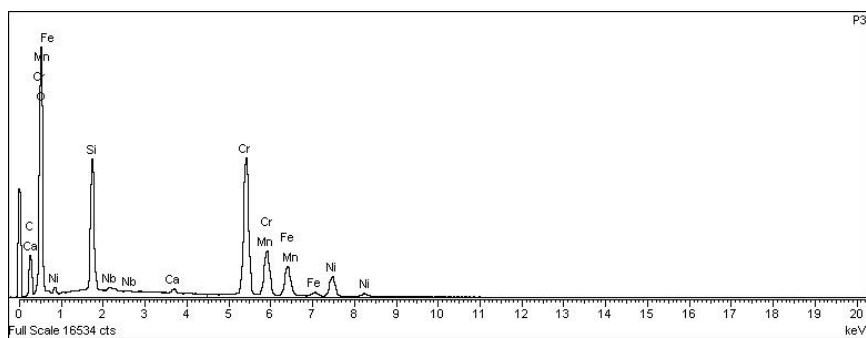
A1

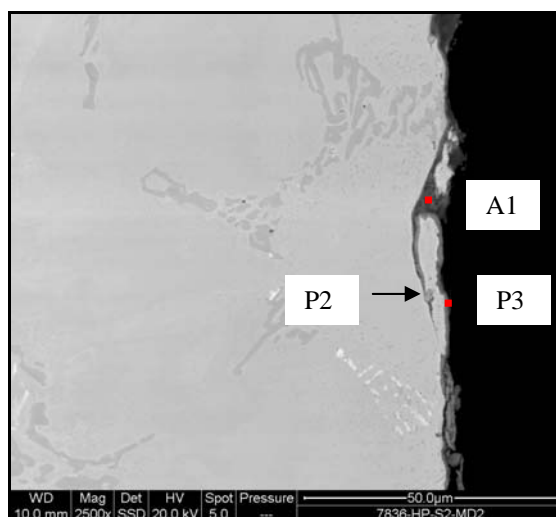


A2

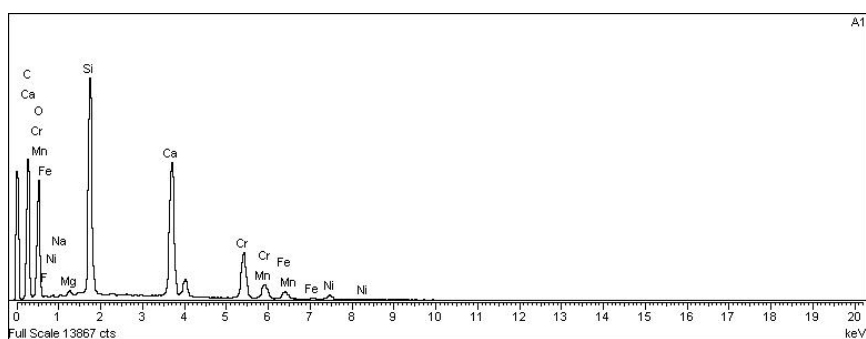


A3

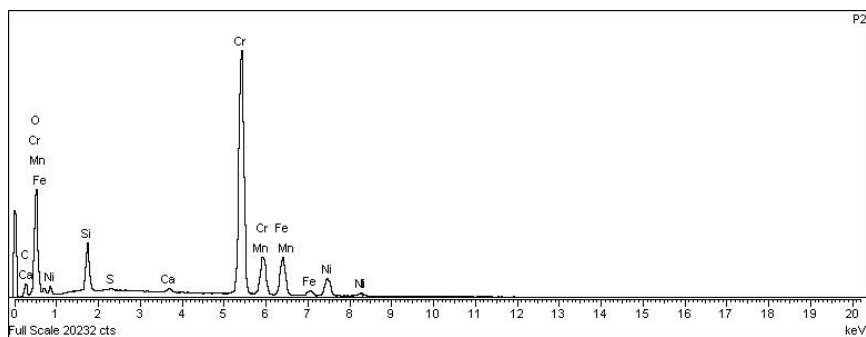




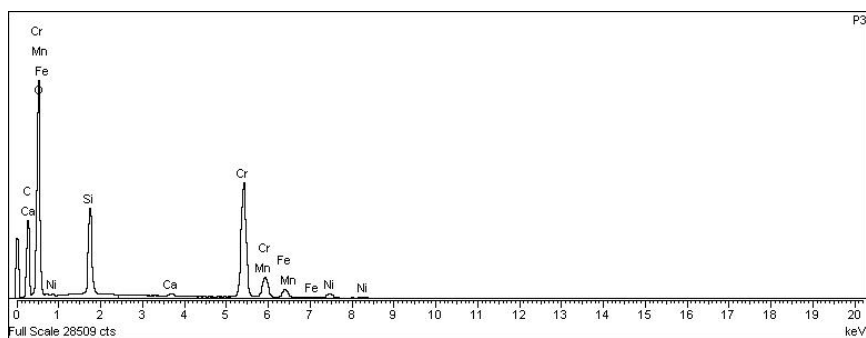
A1



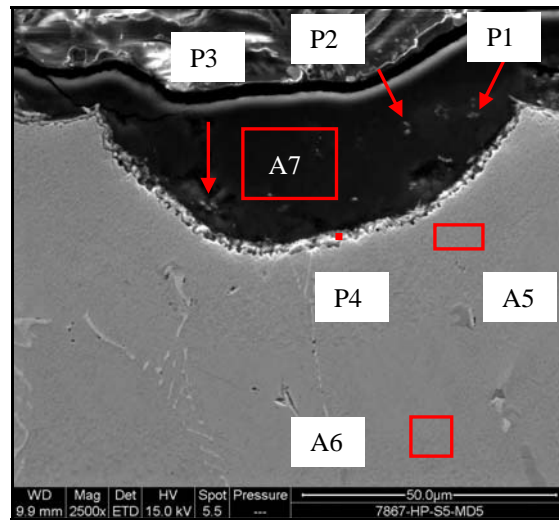
P2



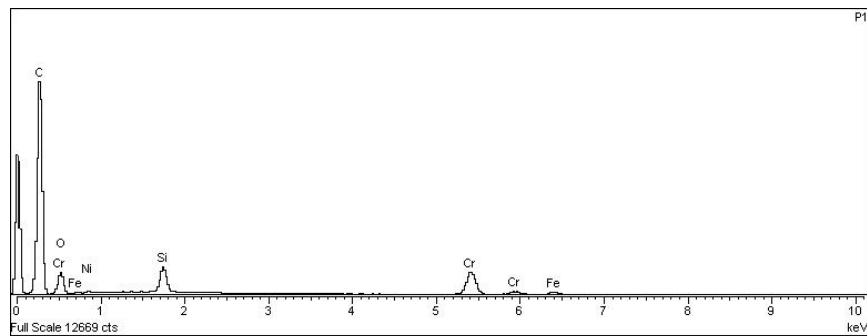
P3



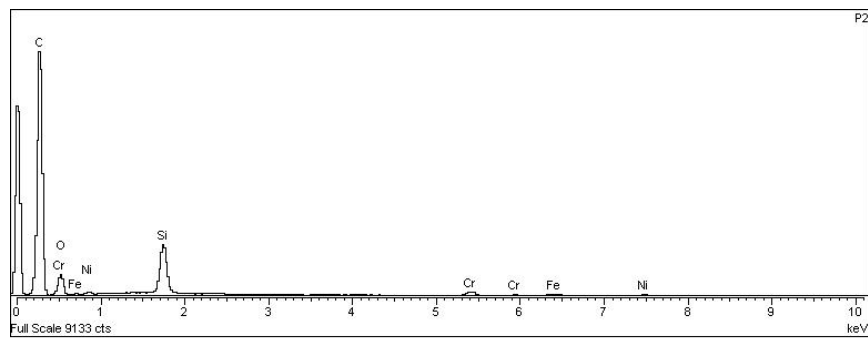
4.5.5 HP Tested at 750°C for 500h



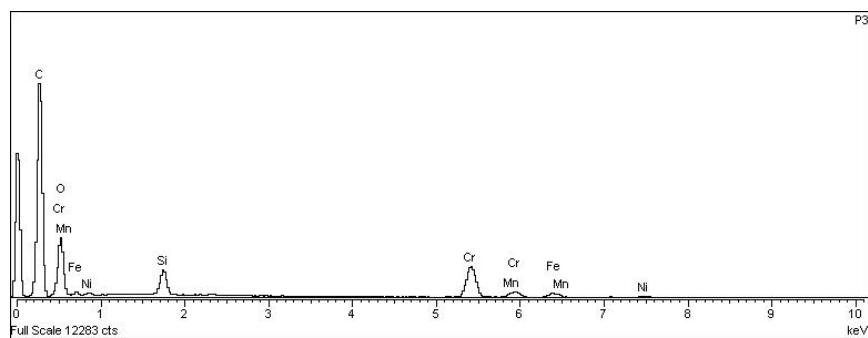
P1



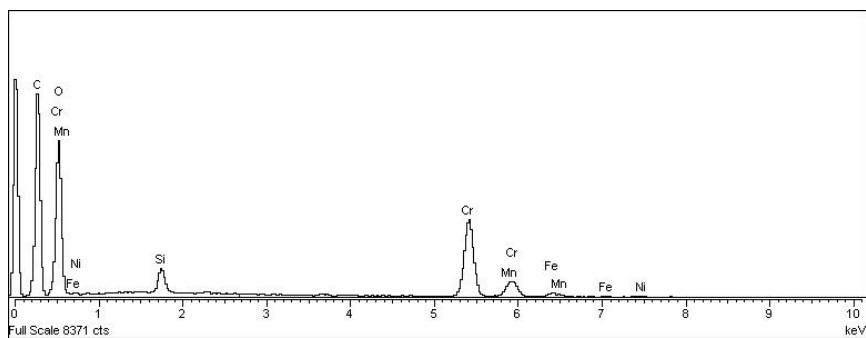
P2



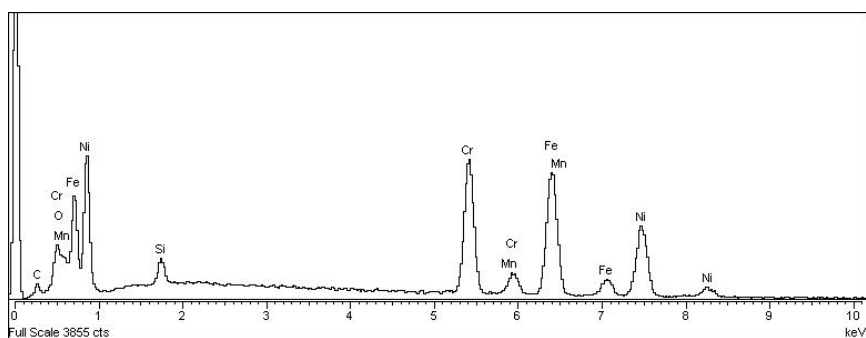
P3



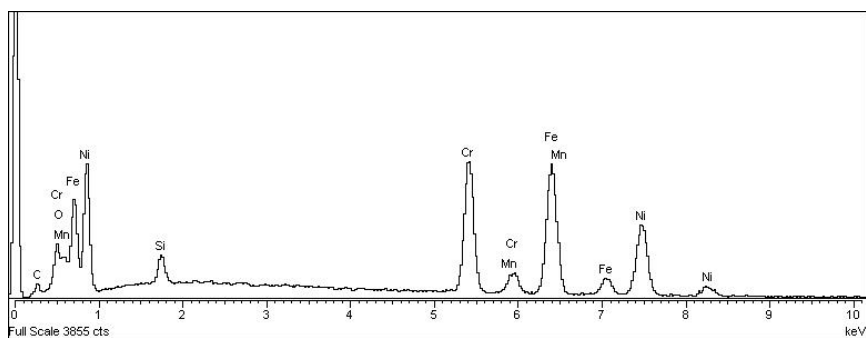
P4



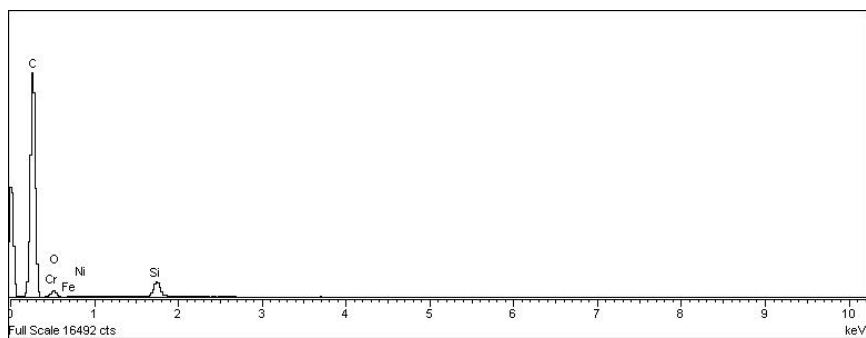
A5

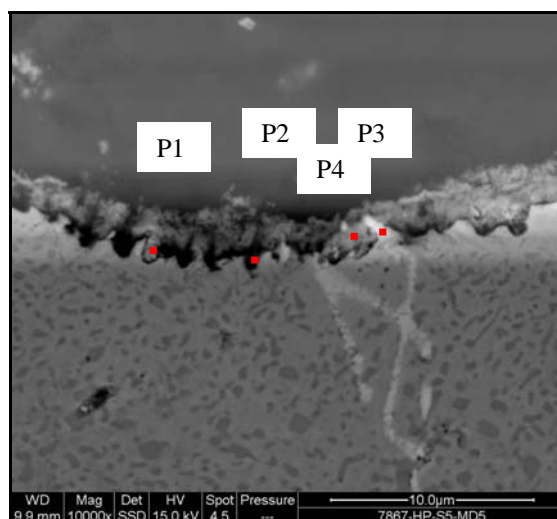


A6

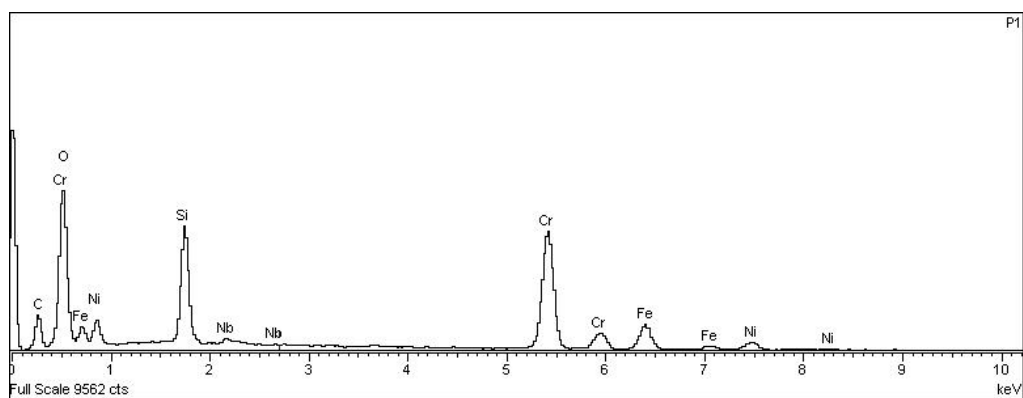


A7

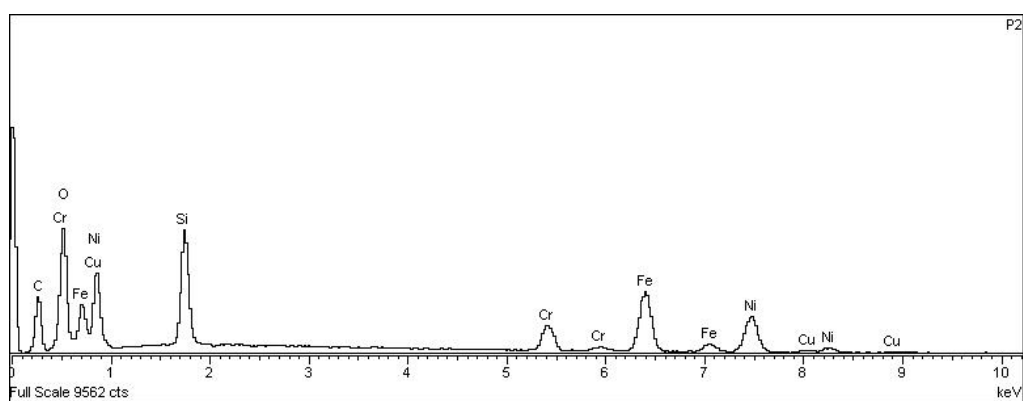




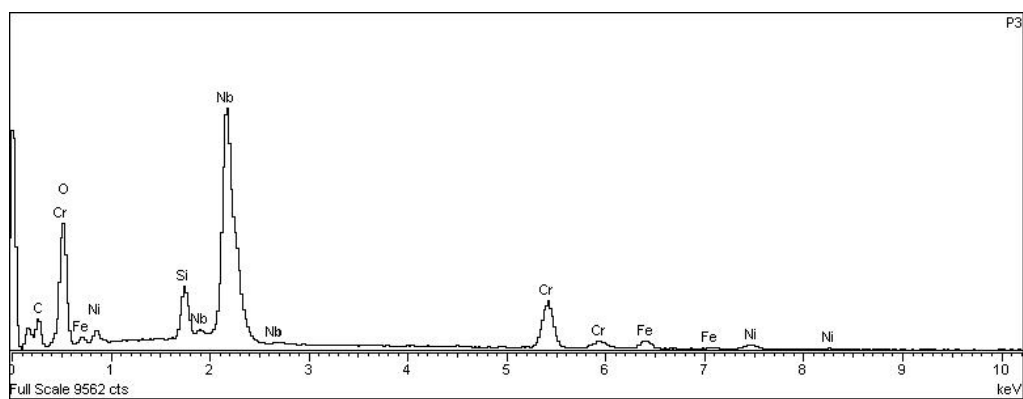
P1



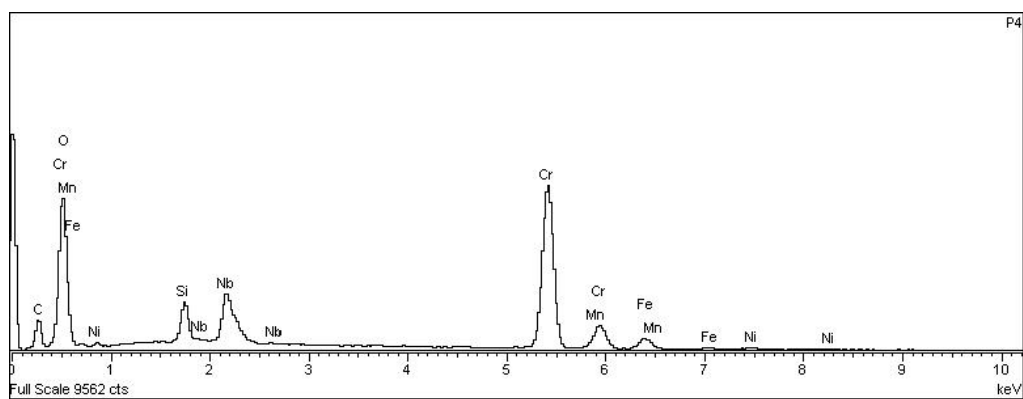
P2



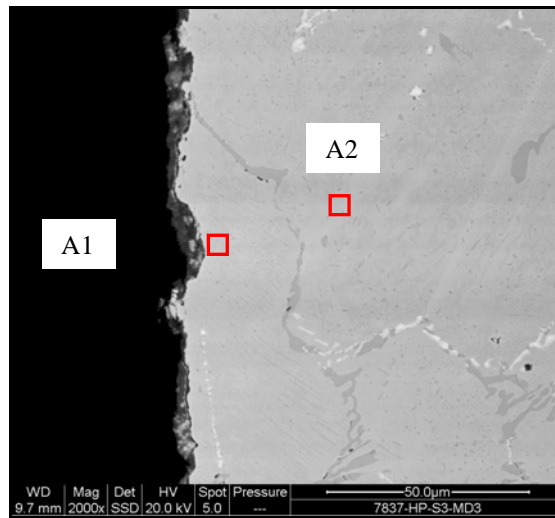
P3



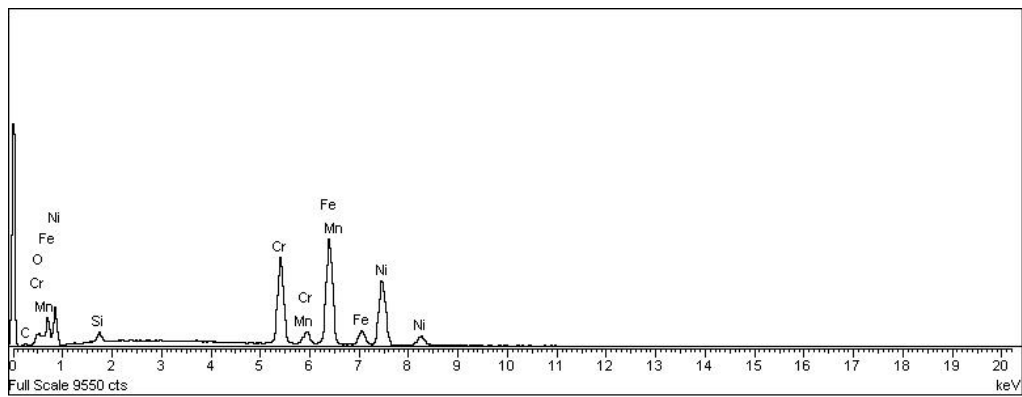
P4



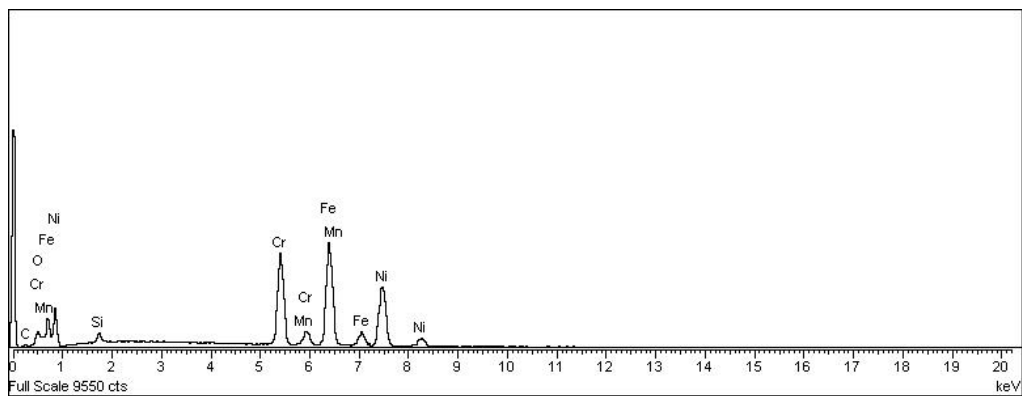
4.5.6 HP Tested at 850°C for 100h

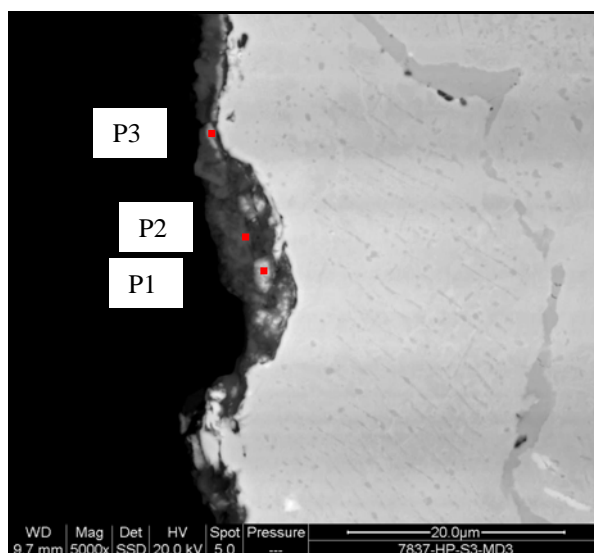


A1

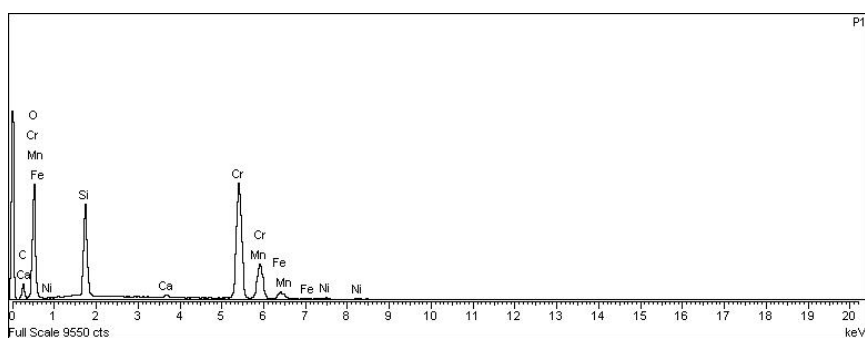


A2

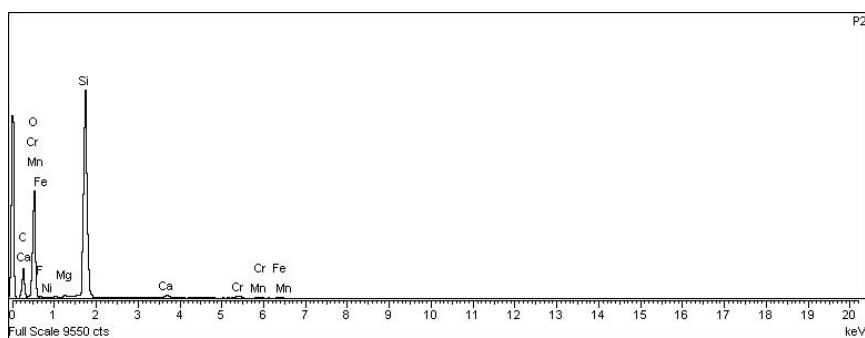




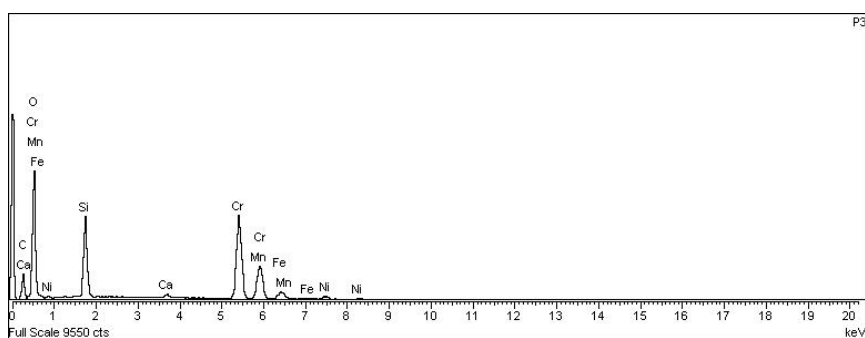
P1

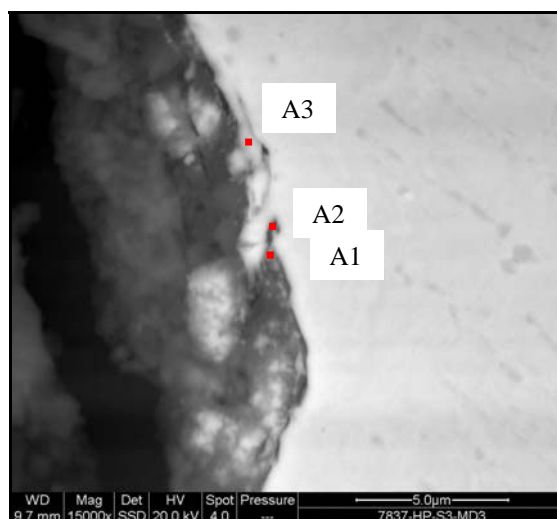


P2

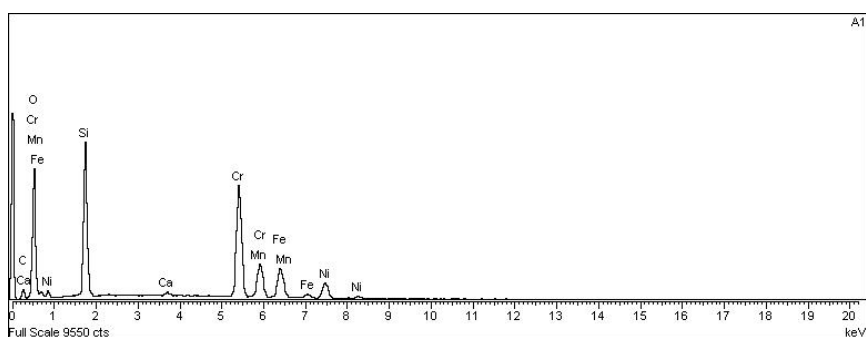


P3

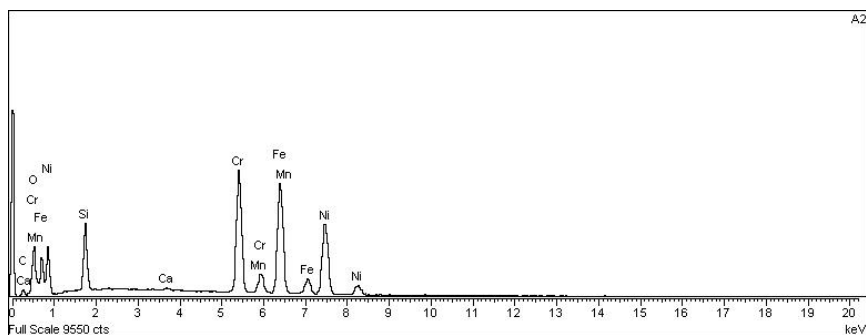




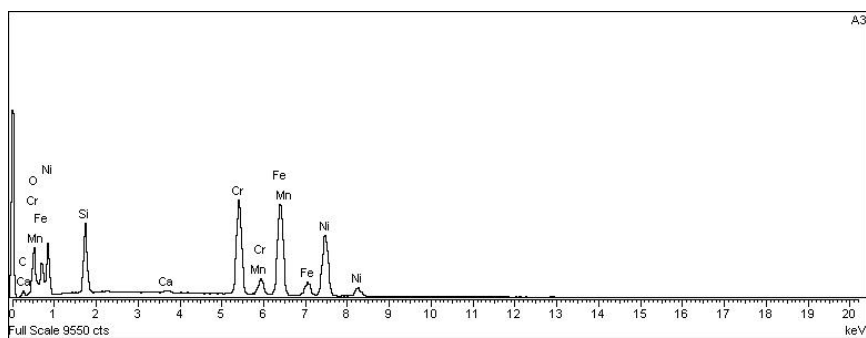
A1



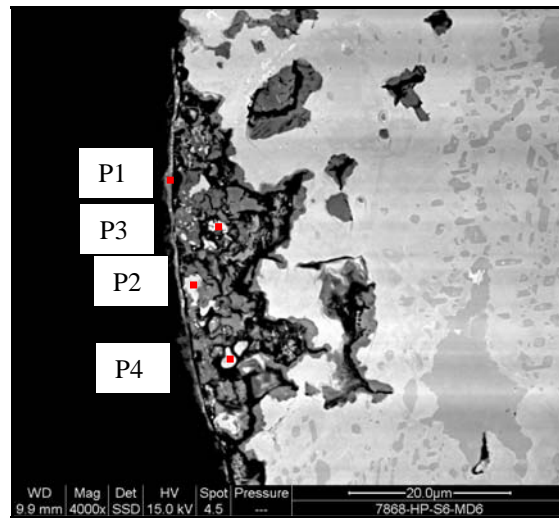
A2



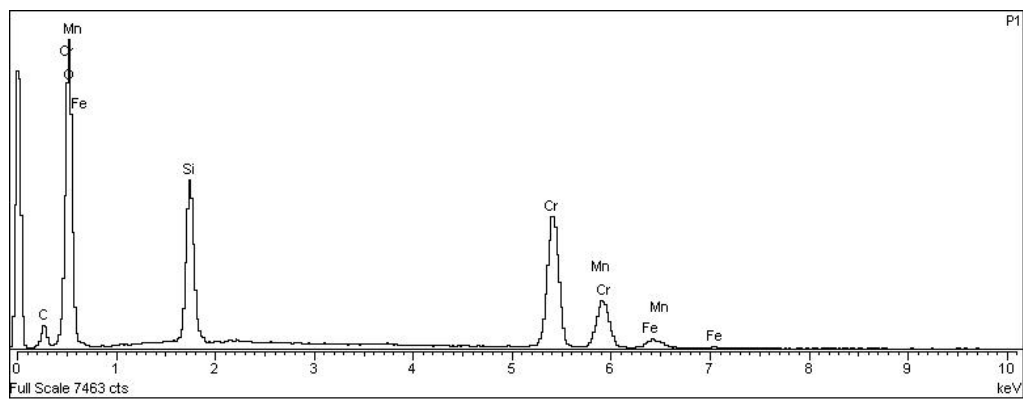
A3



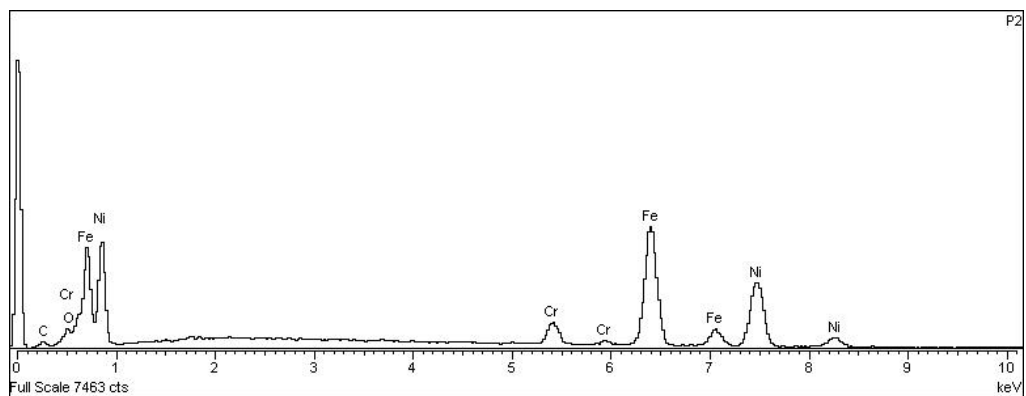
4.5.7 HP Tested at 850°C for 500h



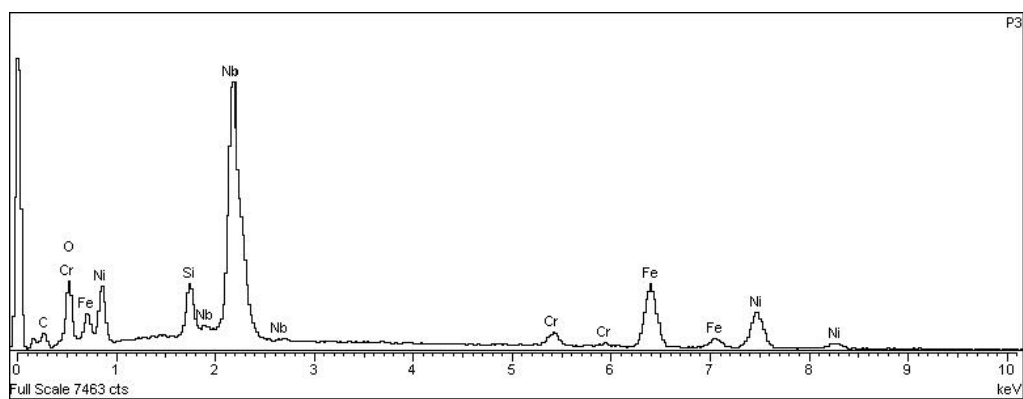
P1



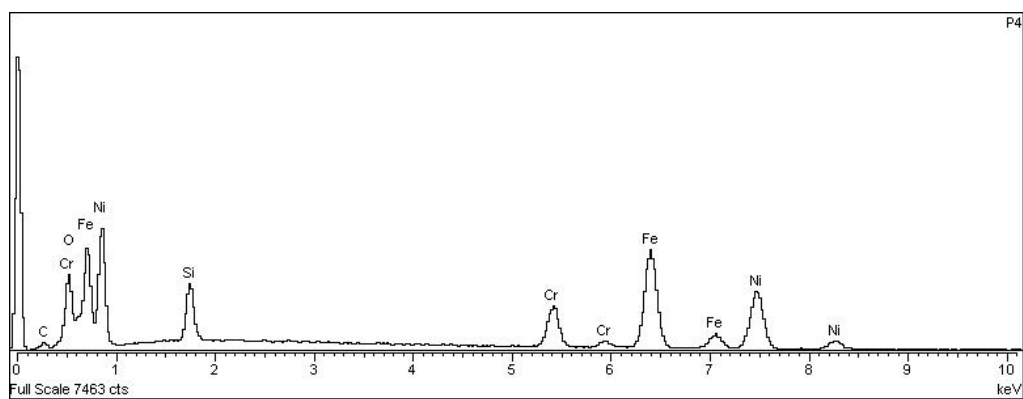
P2

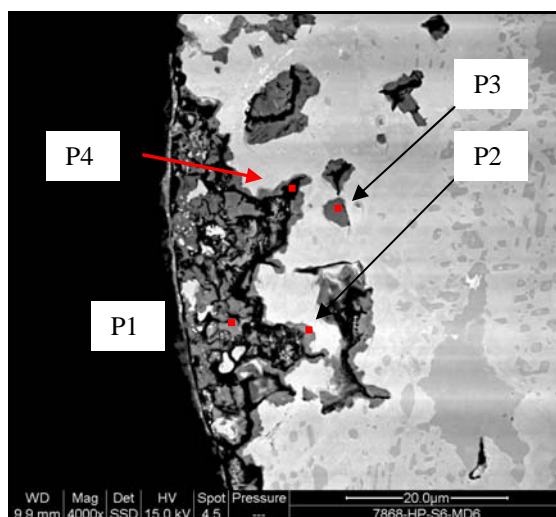


P3

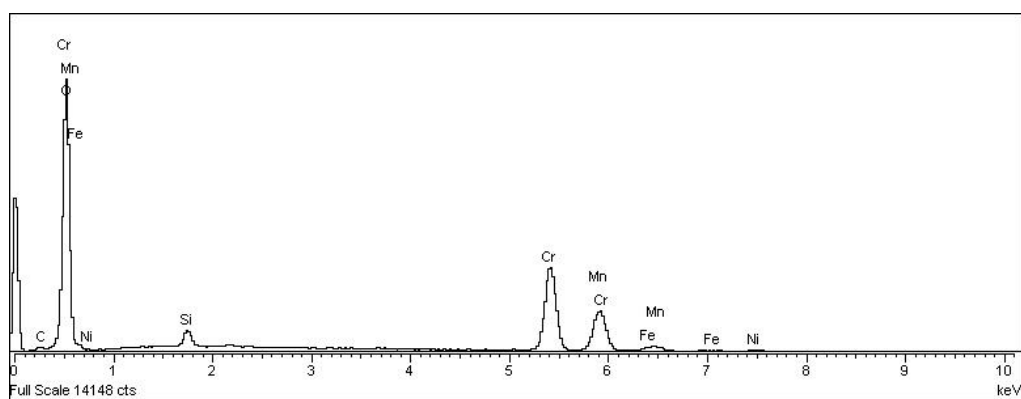


P4

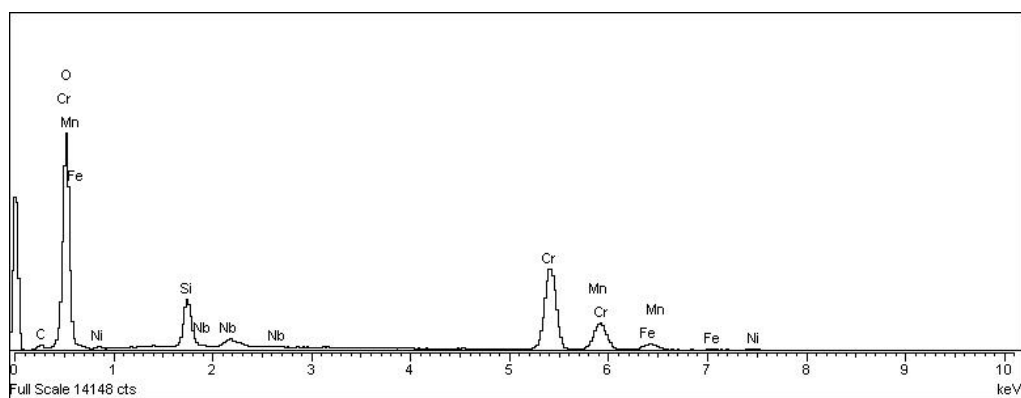




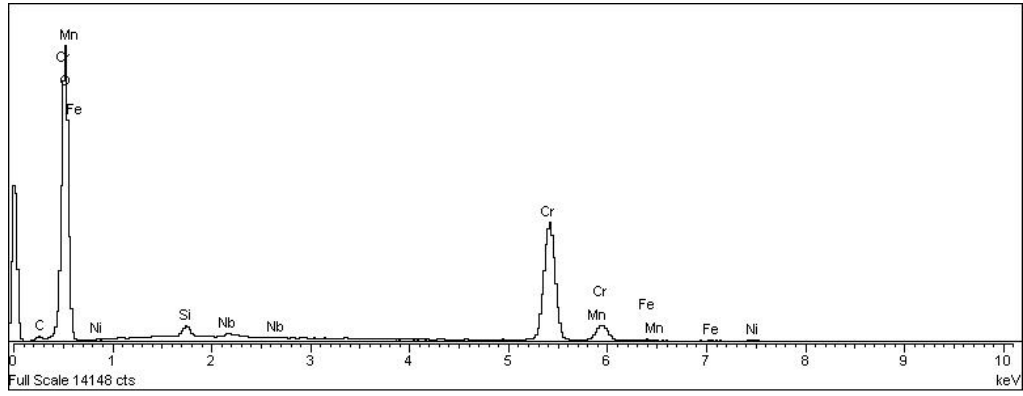
P1



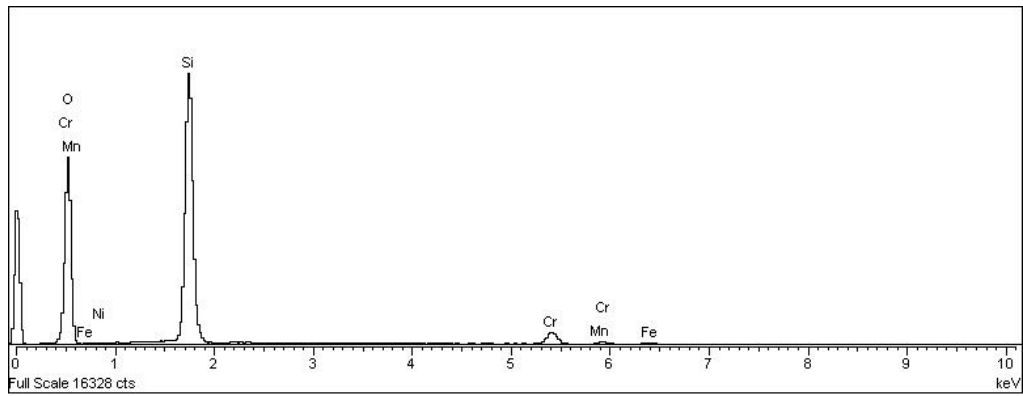
P2



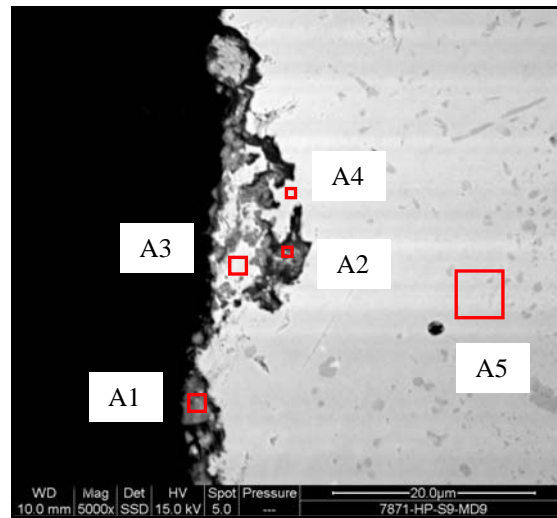
P3



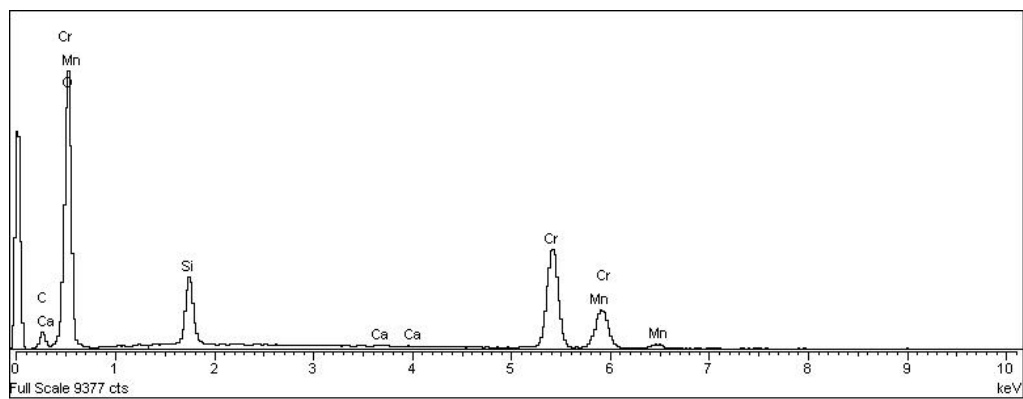
P4



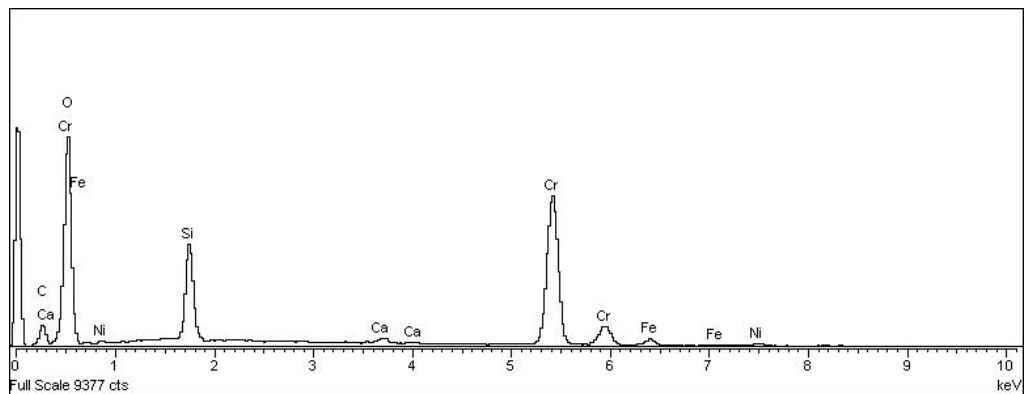
4.5.8 HP Tested at 850°C for 1000h



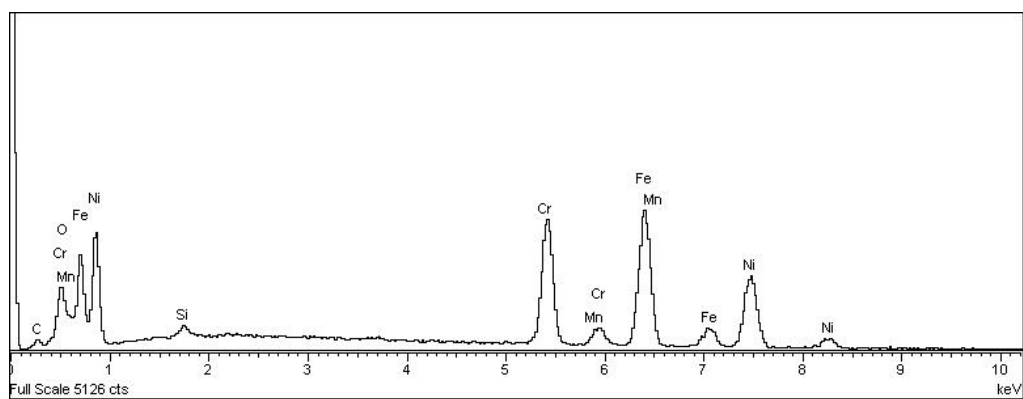
A1



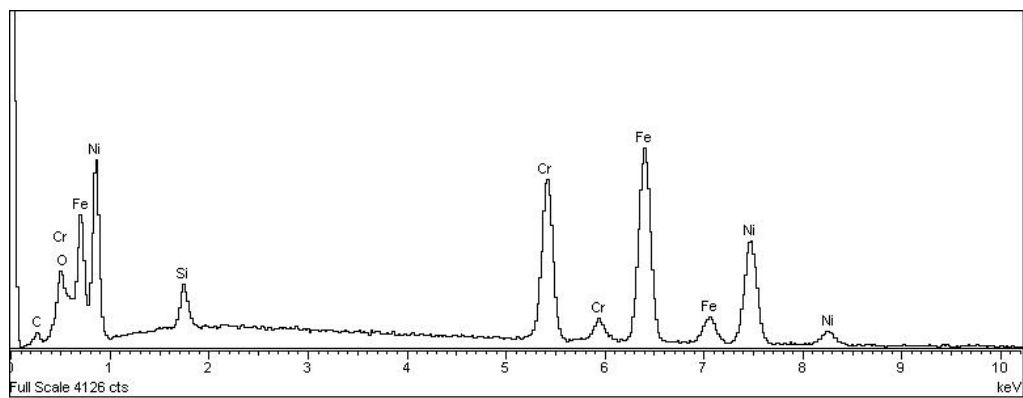
A2



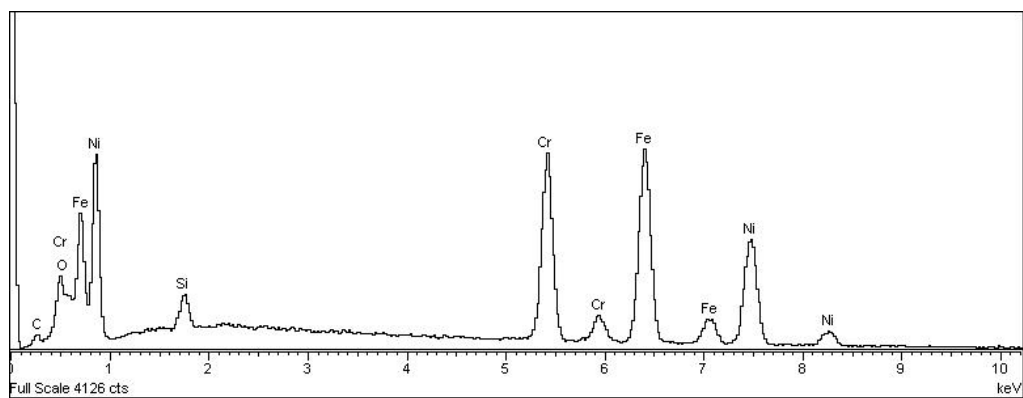
A3

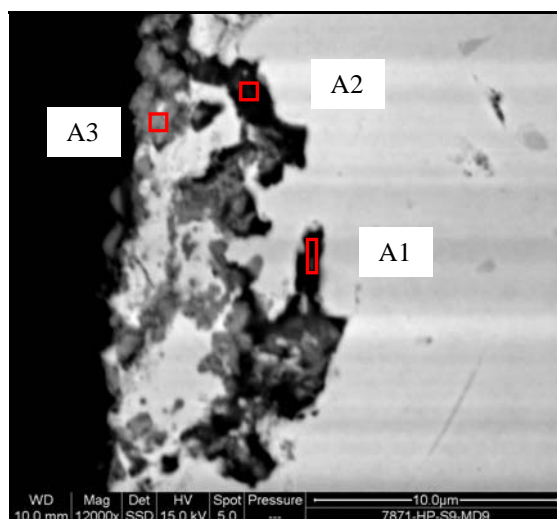


A4

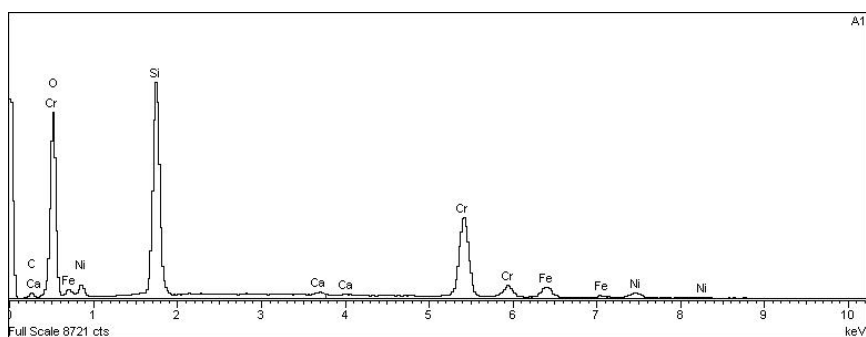


A5

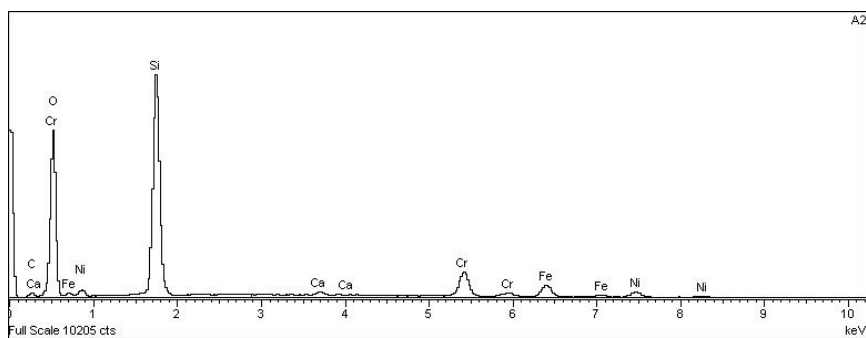




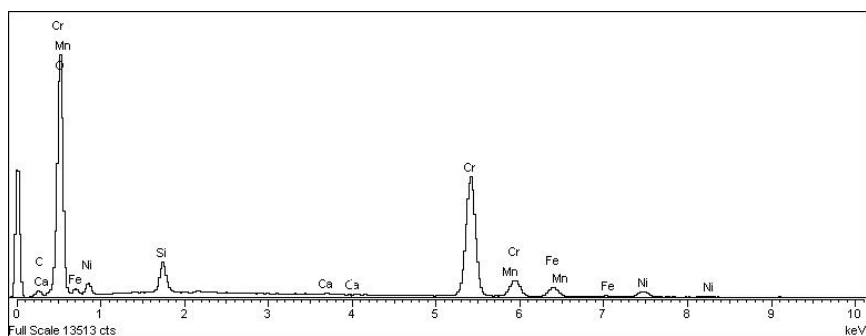
A1



A2



A3



5 Alloy 35Cr-45Ni

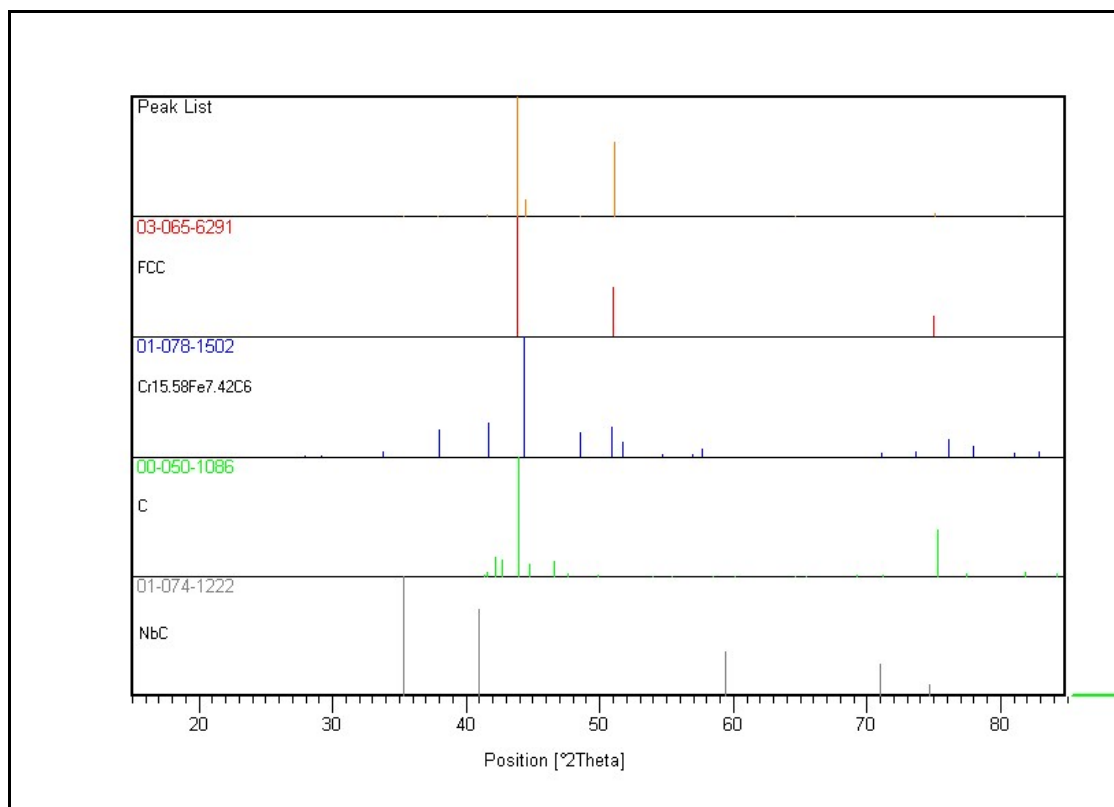
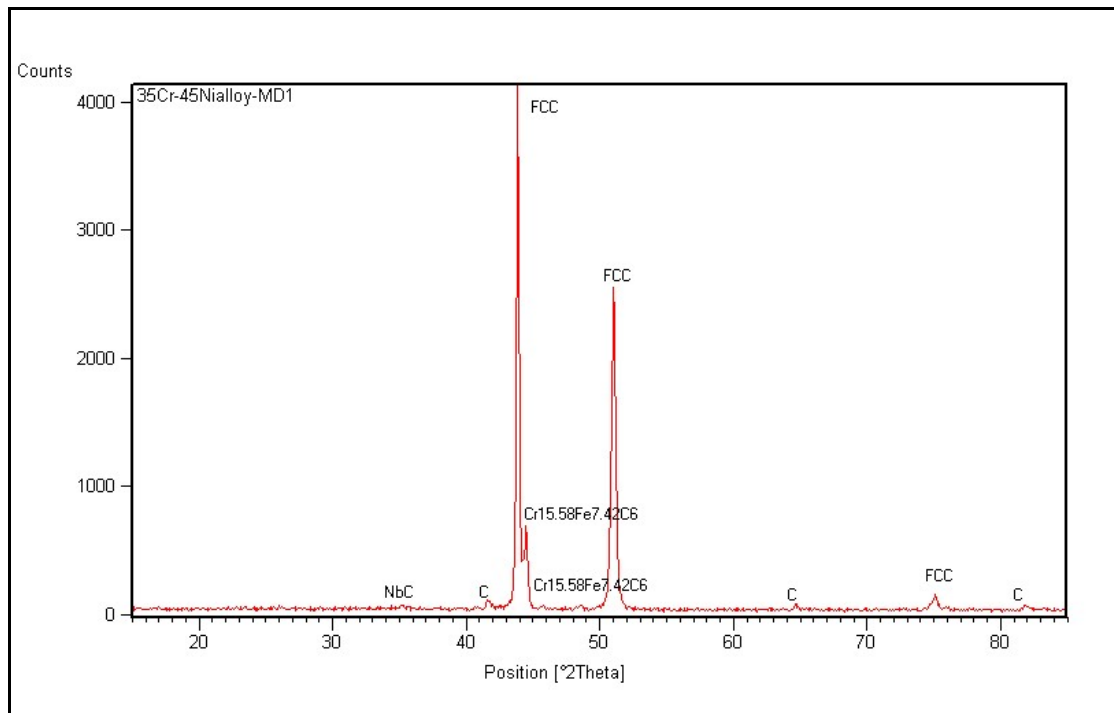
5.1 Weight Change Measurements

Table 5.1 Weight change (mg/cm^2) of the alloy after the exposure at different temperatures for different periods of time.

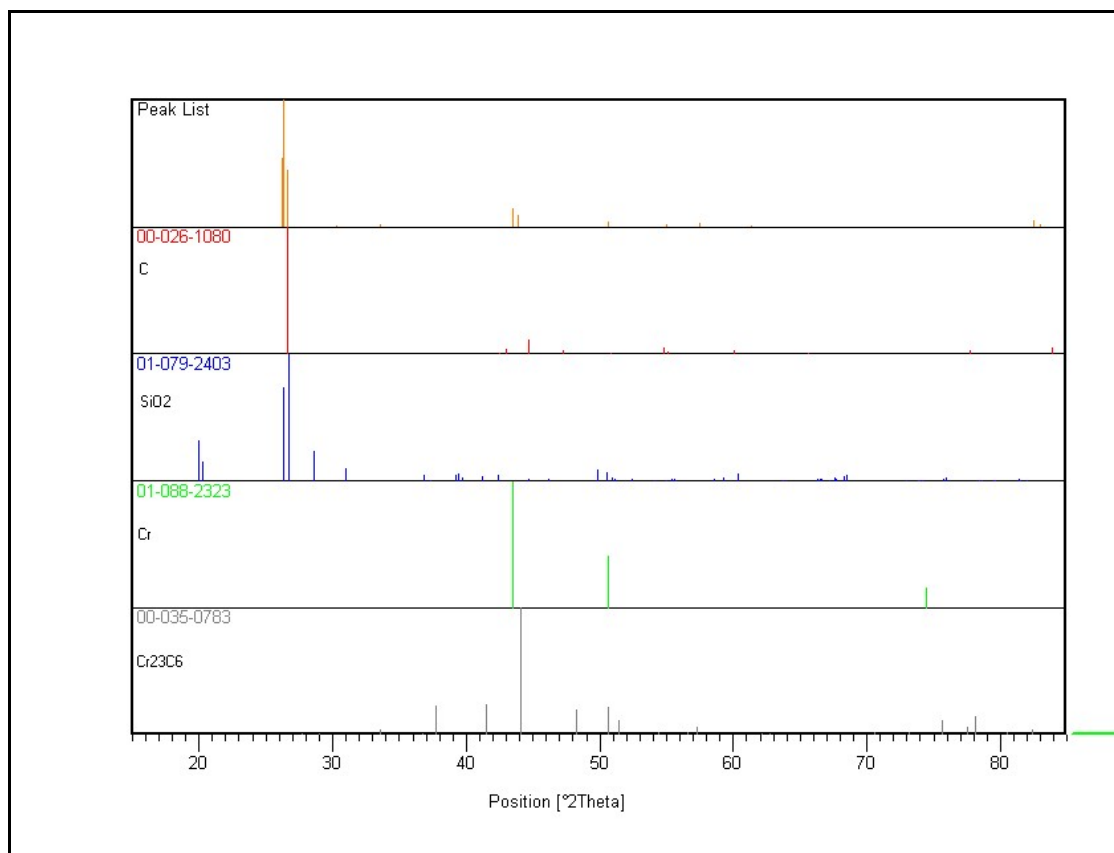
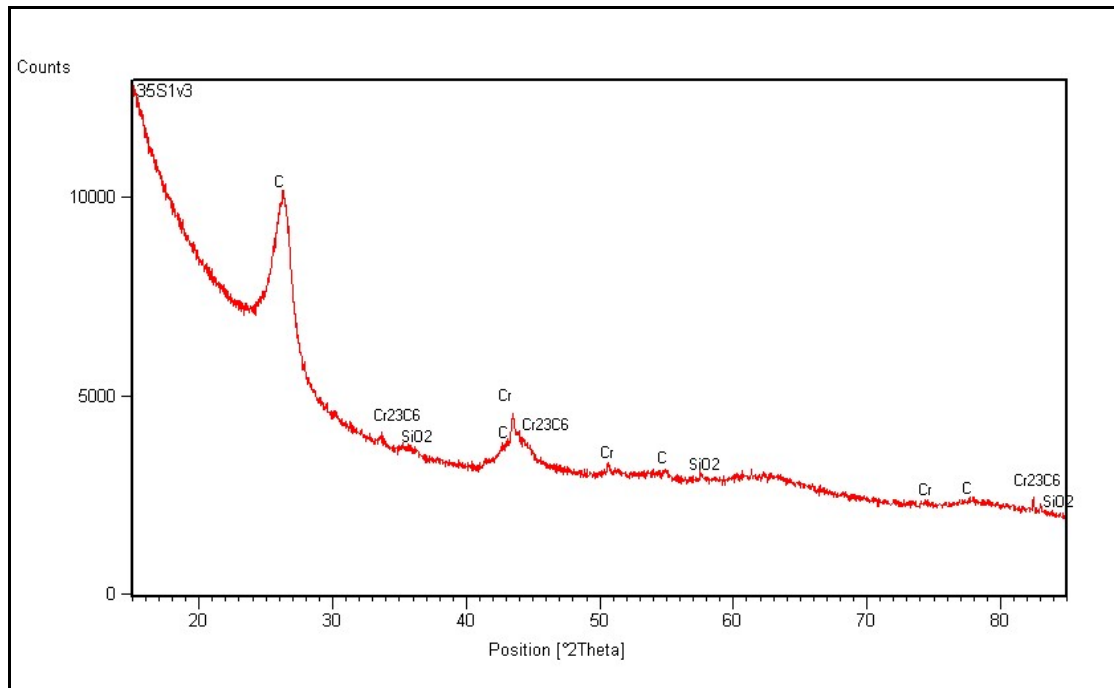
Time, h	T, °C	W_{before} , g	W_{after} , g	A, cm^2	$\Delta W/A$, mg/cm^2
100	650	15.1612	15.1625	12.2618	0.1060
500	650	15.2934	15.2831	12.3573	-0.8335
1000	650	15.6656	15.6700	12.4176	0.3519
100	750	15.1753	15.1807	12.2950	0.4392
500	750	15.7309	15.7374	12.5228	0.5191
1000	750	16.0499	16.0523	12.5826	0.1907
100	850	15.0914	15.0960	12.2959	0.3741
500	850	15.5593	15.6401	12.4504	0.3855
1000	850	16.3412	14.3430	12.6177	0.1427

5.2 X ray Diffraction Results

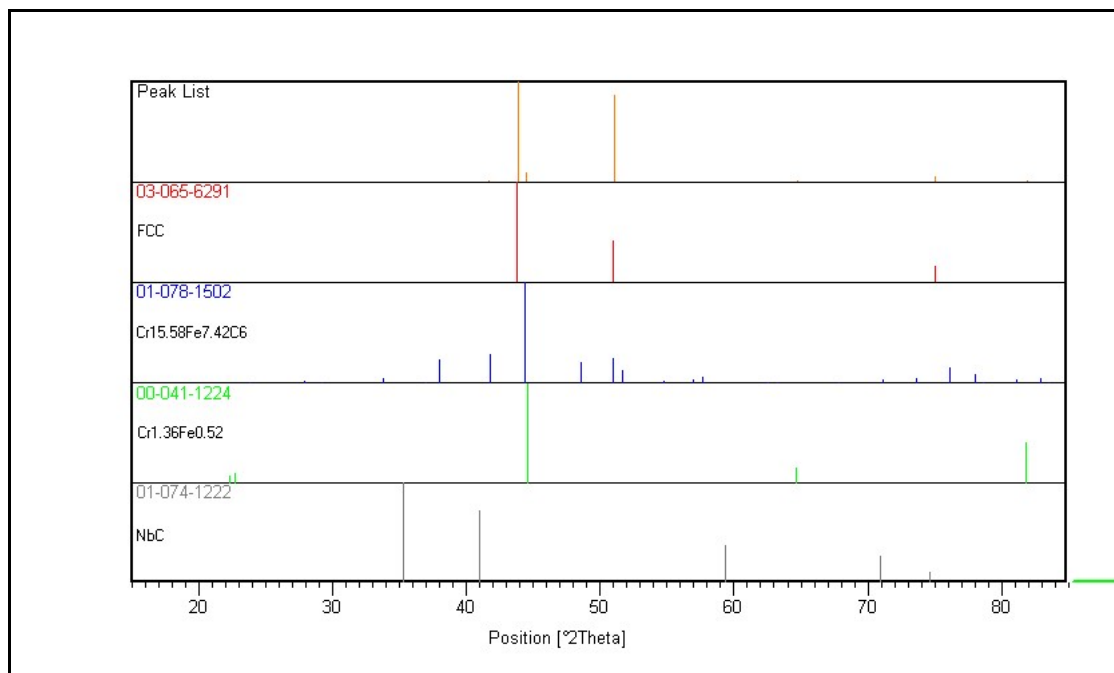
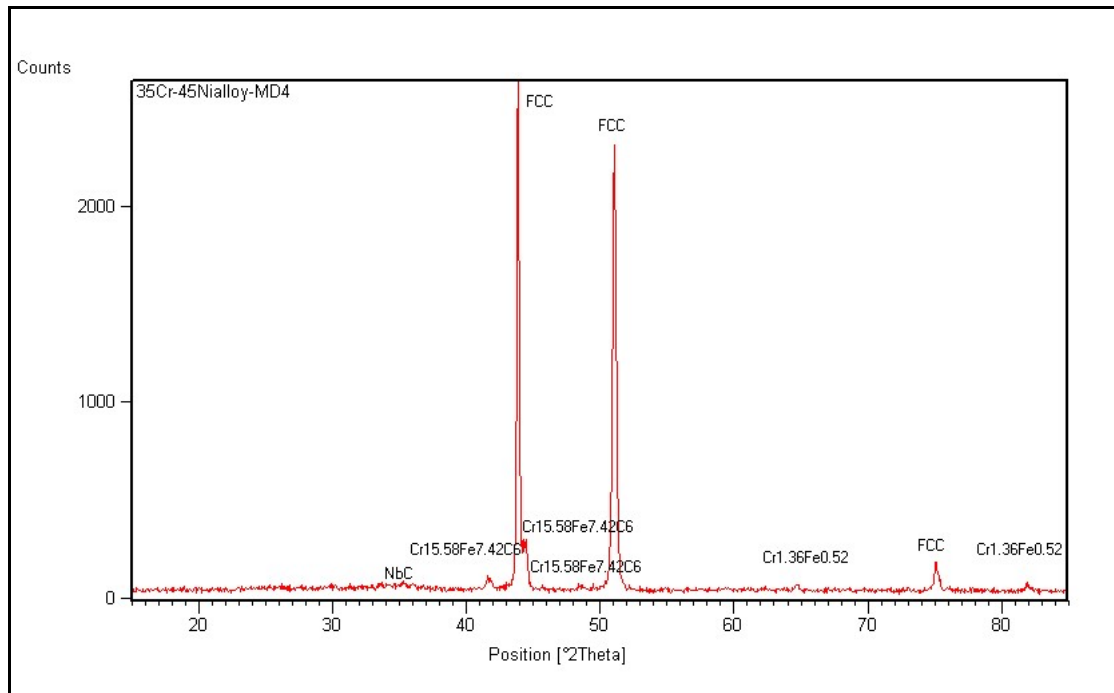
5.2.1 35Cr-45Ni after 100h at 650°C



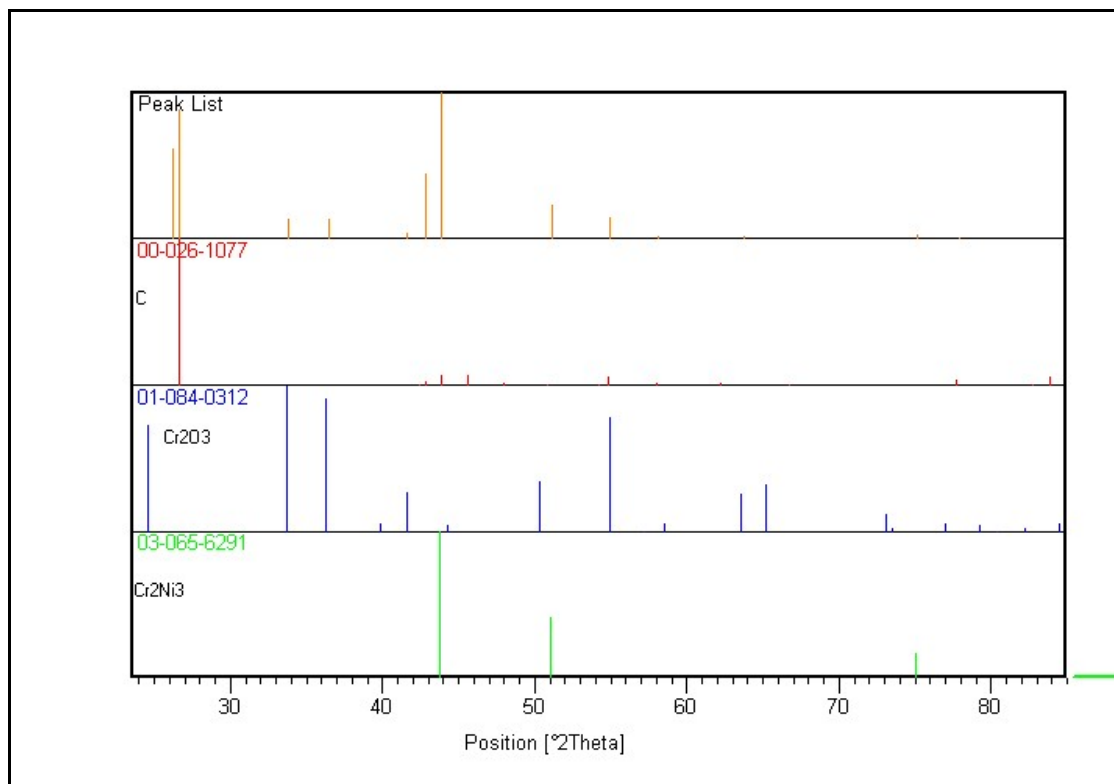
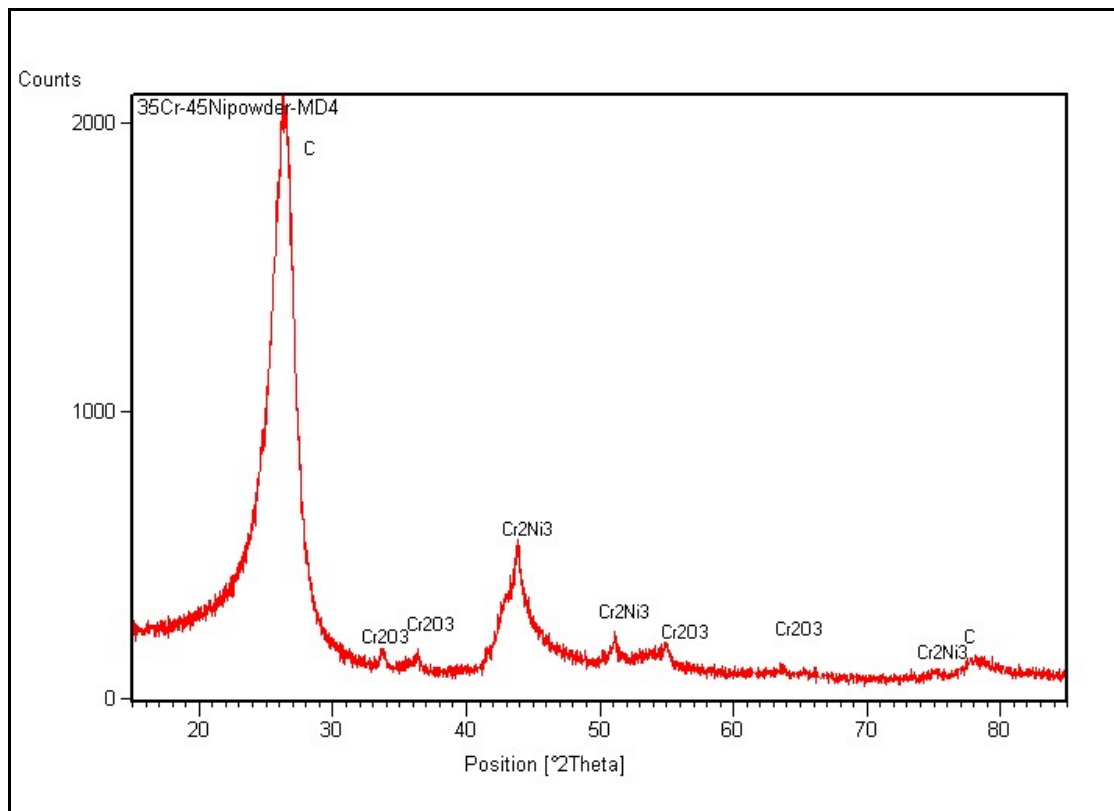
5.2.2 Deposit removed from ^{35}Cr - ^{45}Ni after 100h at 650°C



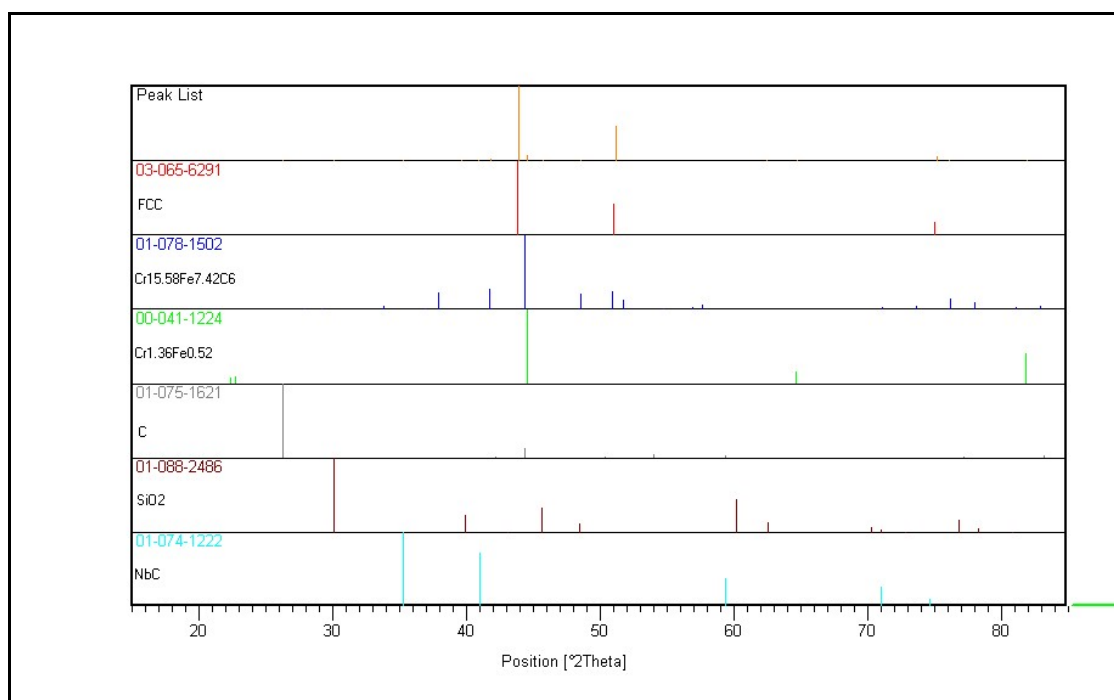
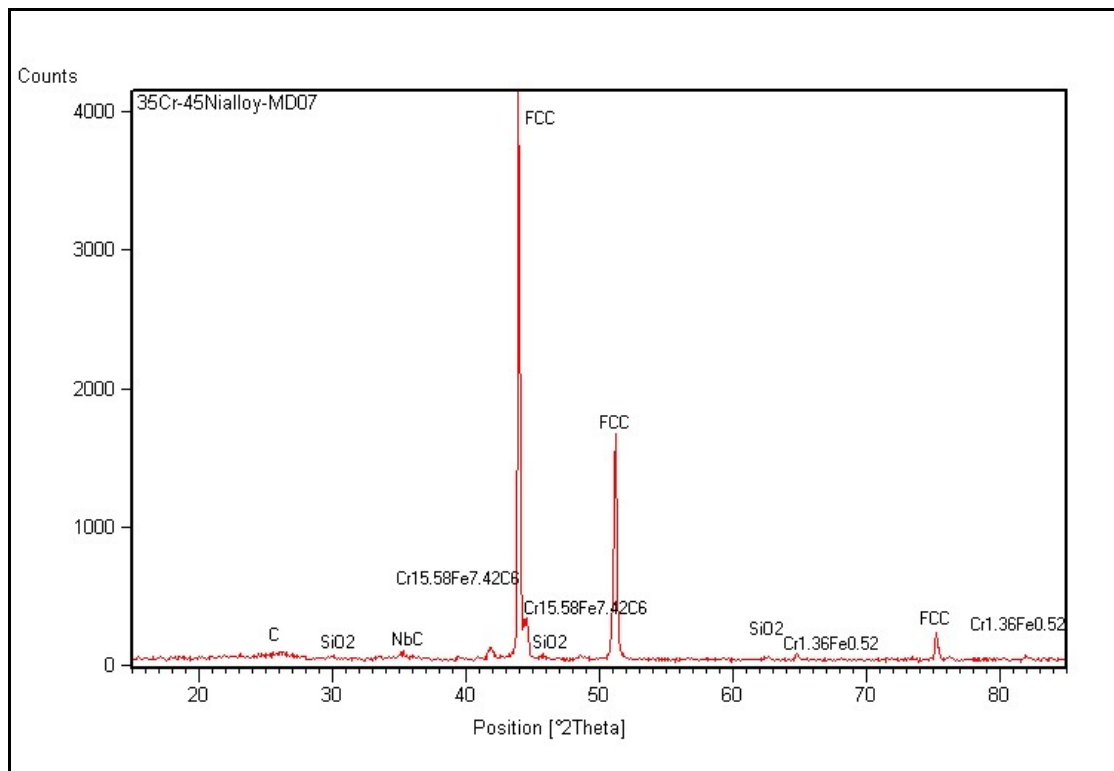
5.2.3 35Cr-45Ni after 500h at 650°C



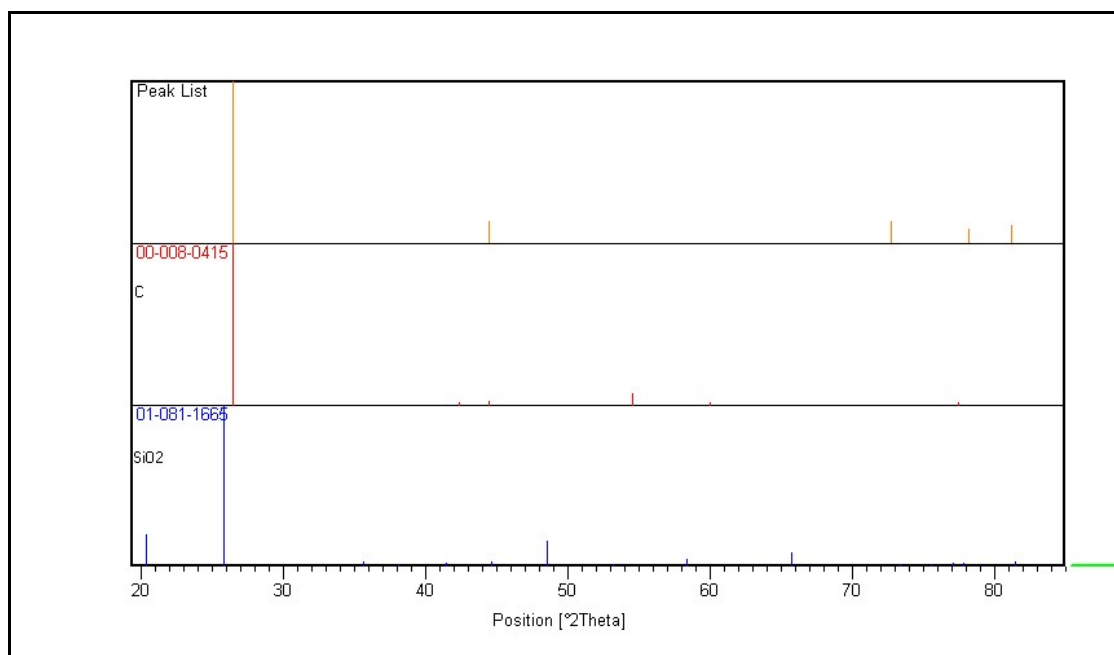
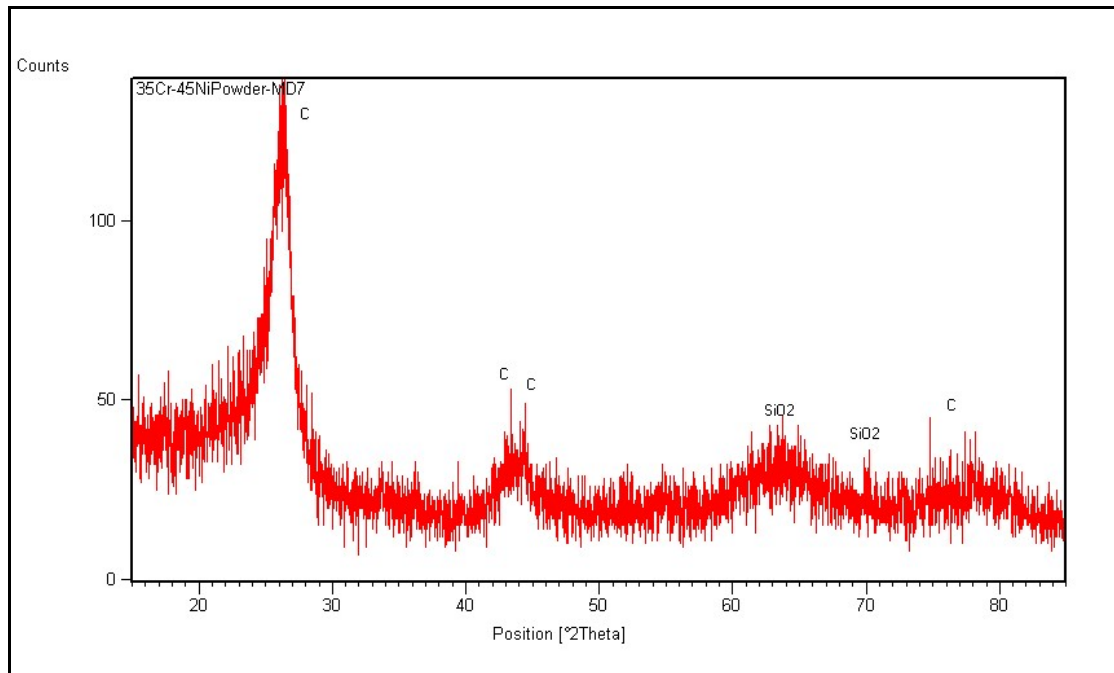
5.2.4 Deposit removed from 35Cr-45Ni after 500h at 650°C



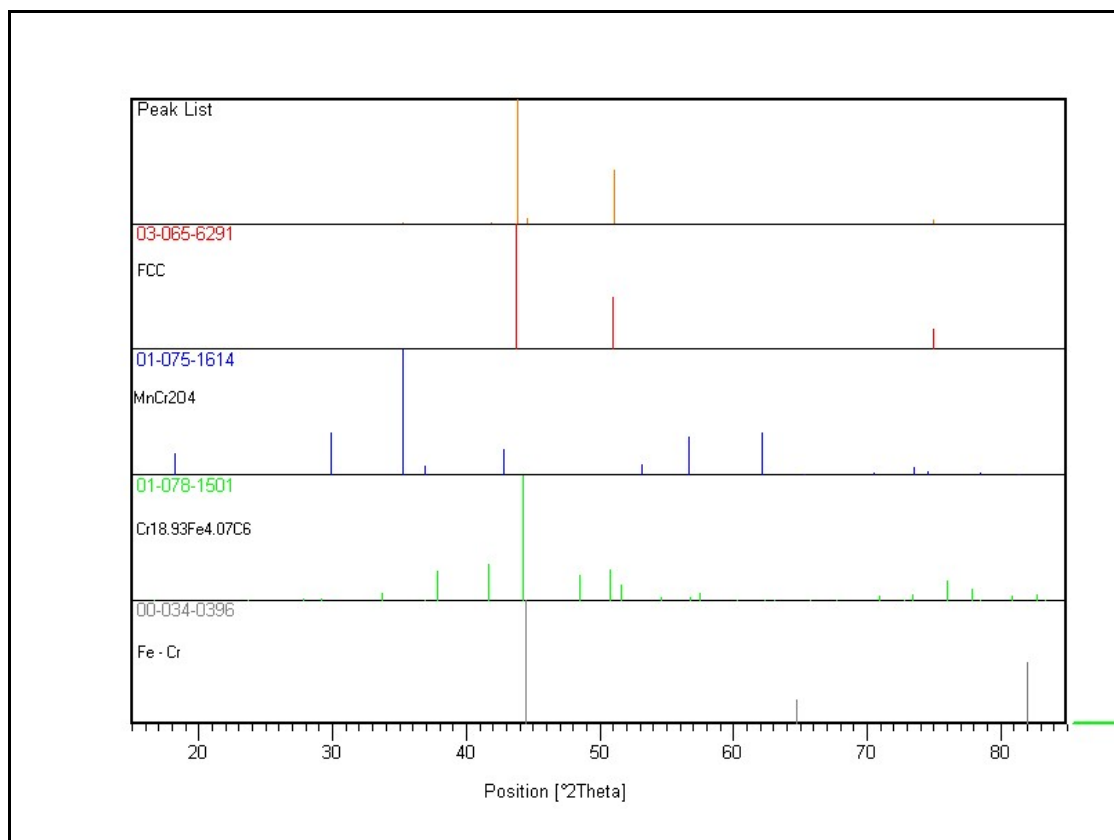
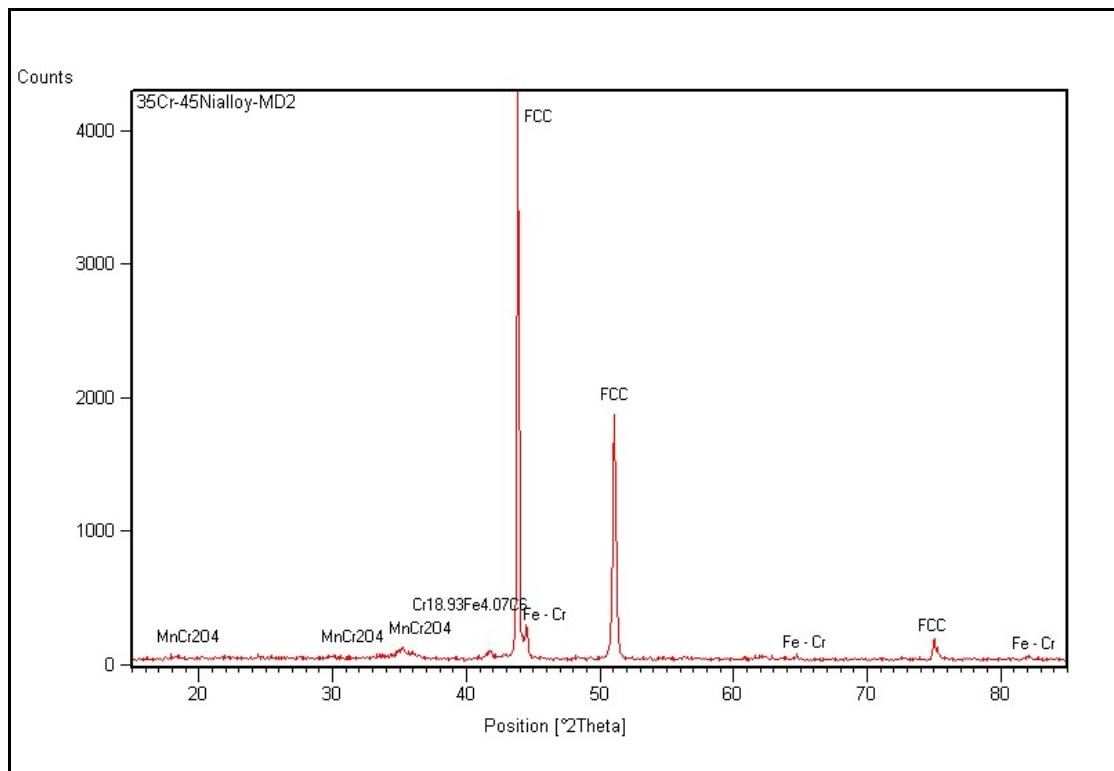
5.2.5 35Cr-45Ni after 1000h at 650°C



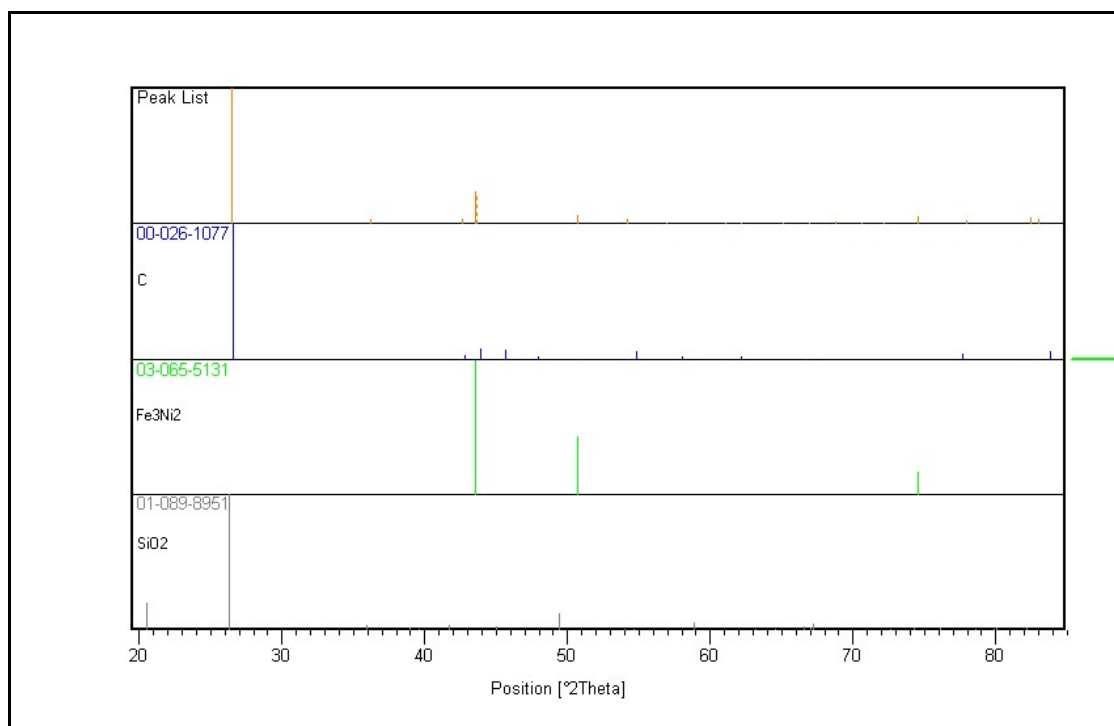
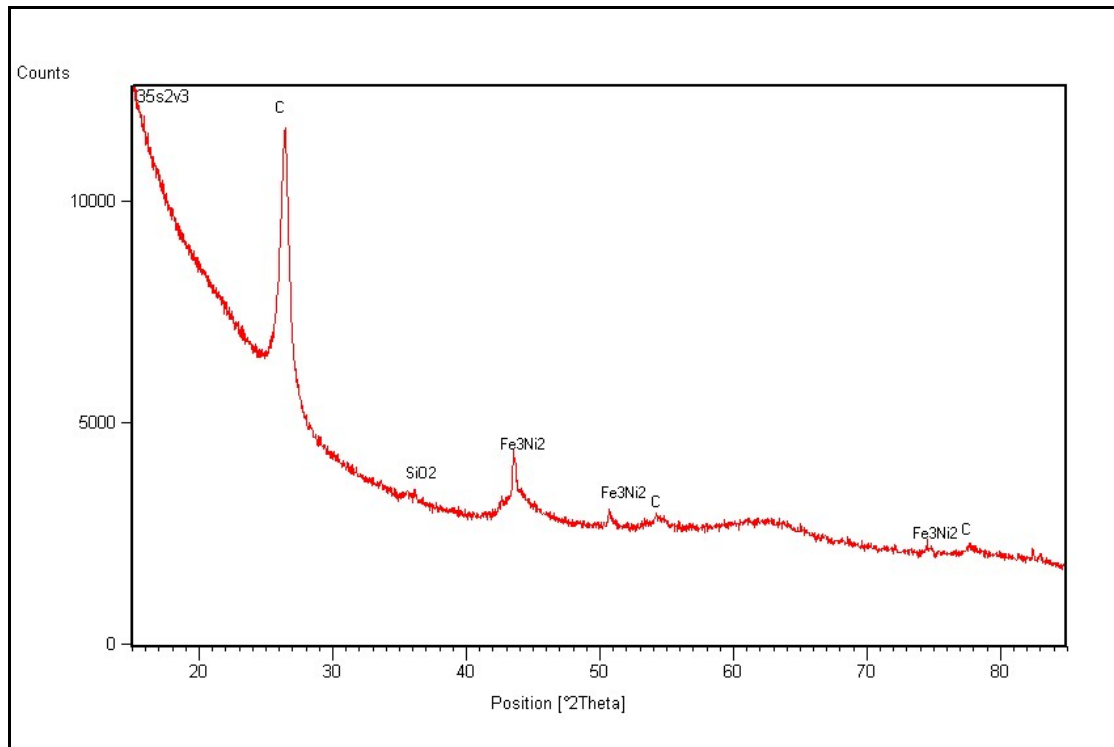
5.2.6 Deposit removed from 35Cr-45Ni after 1000h at 650°C



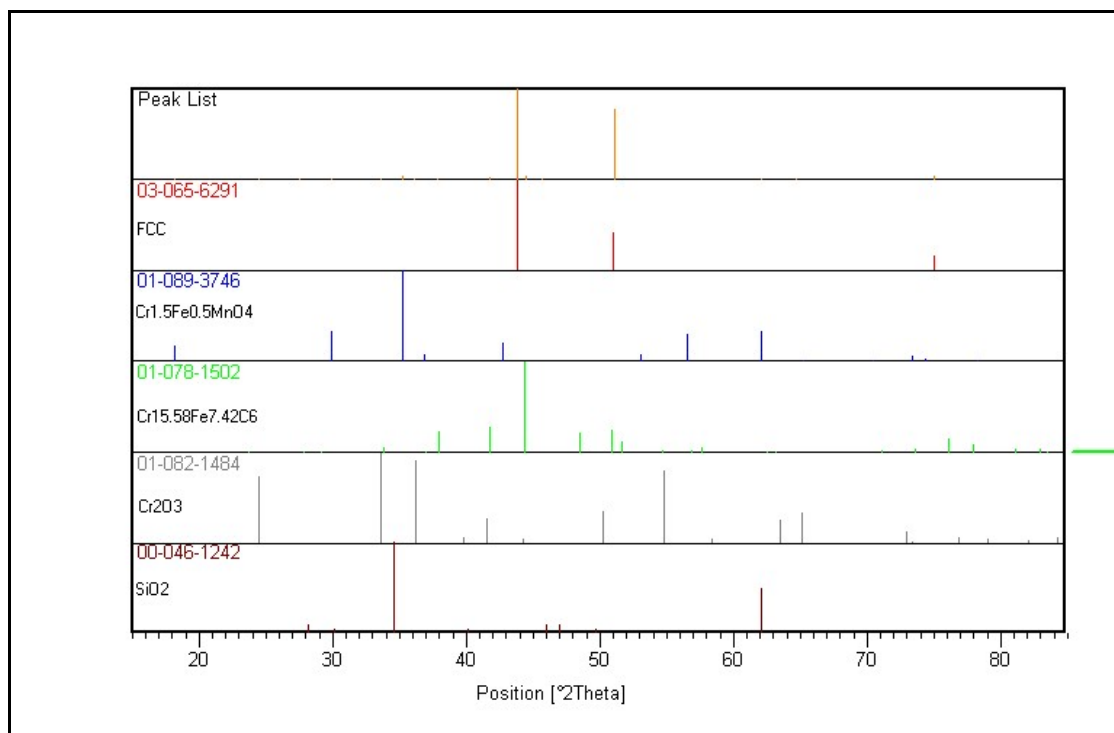
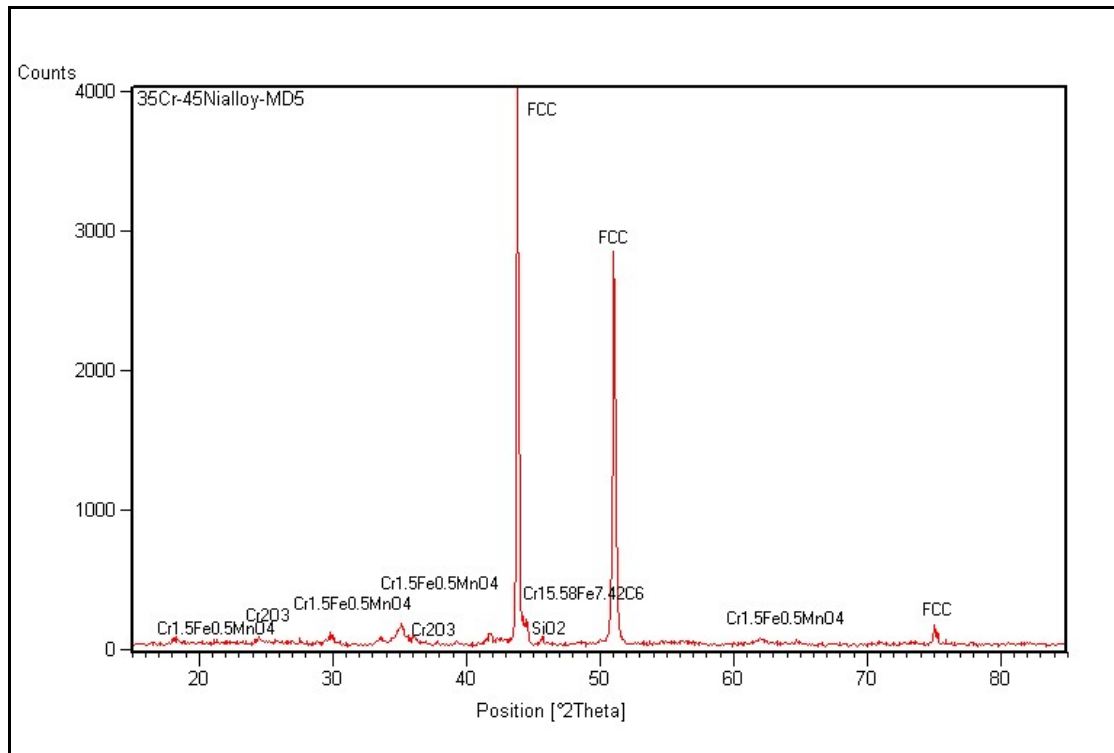
5.2.7 35Cr-45Ni after 100h at 750°C



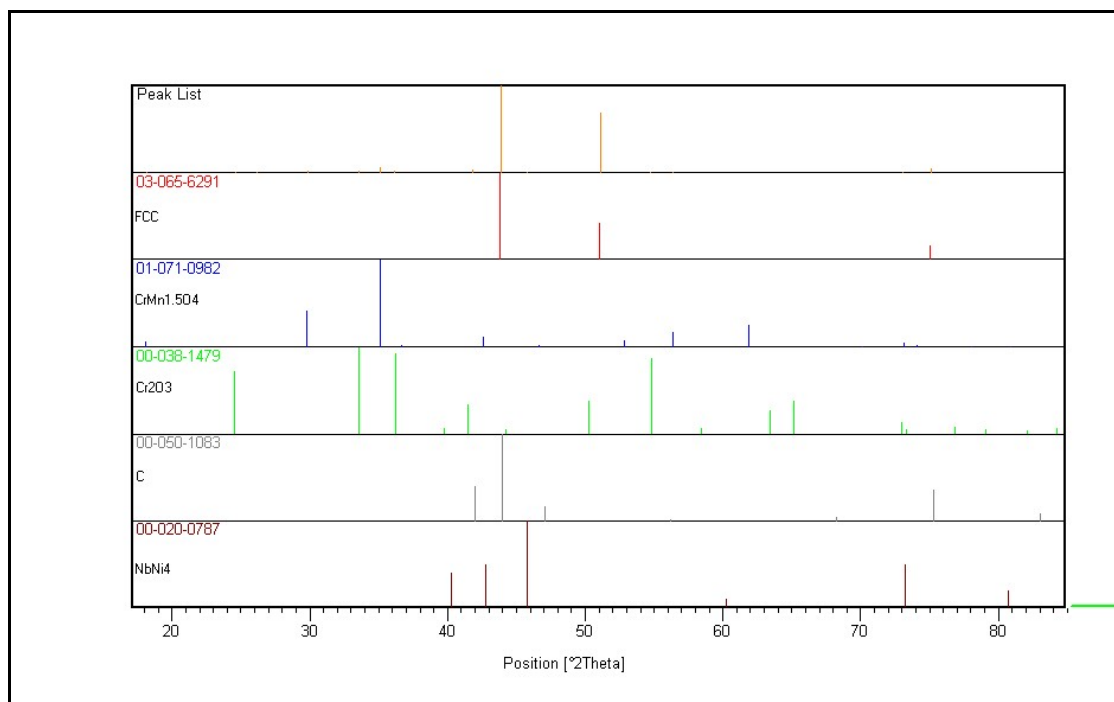
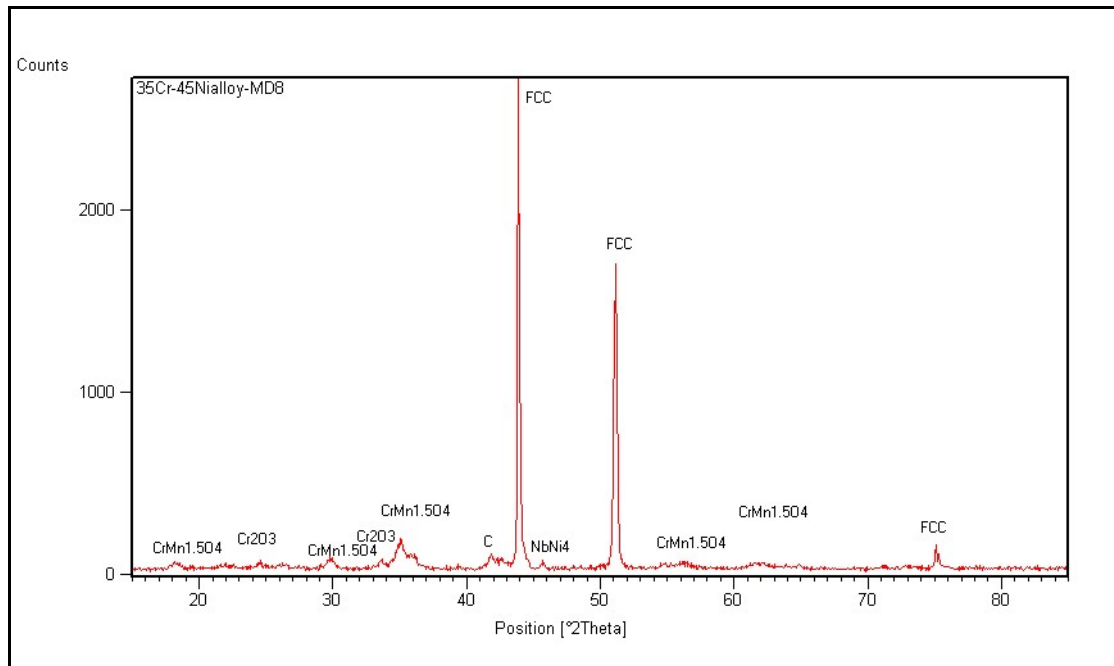
5.2.8 Deposit removed from 35Cr-45Ni after 100h at 750°C



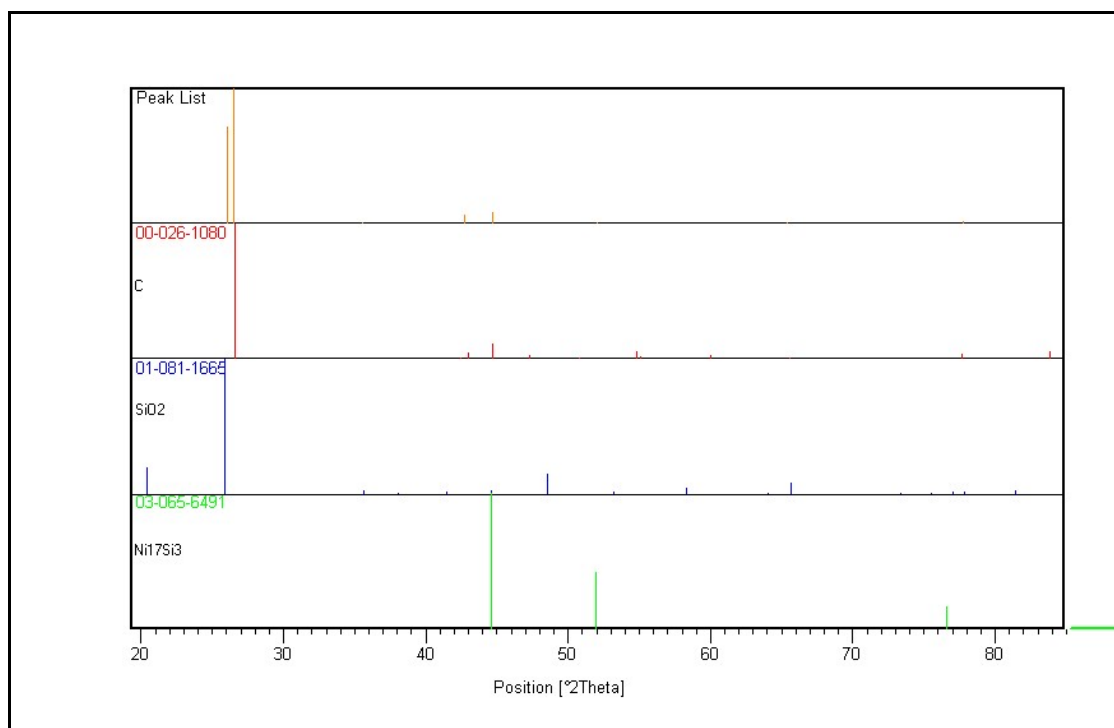
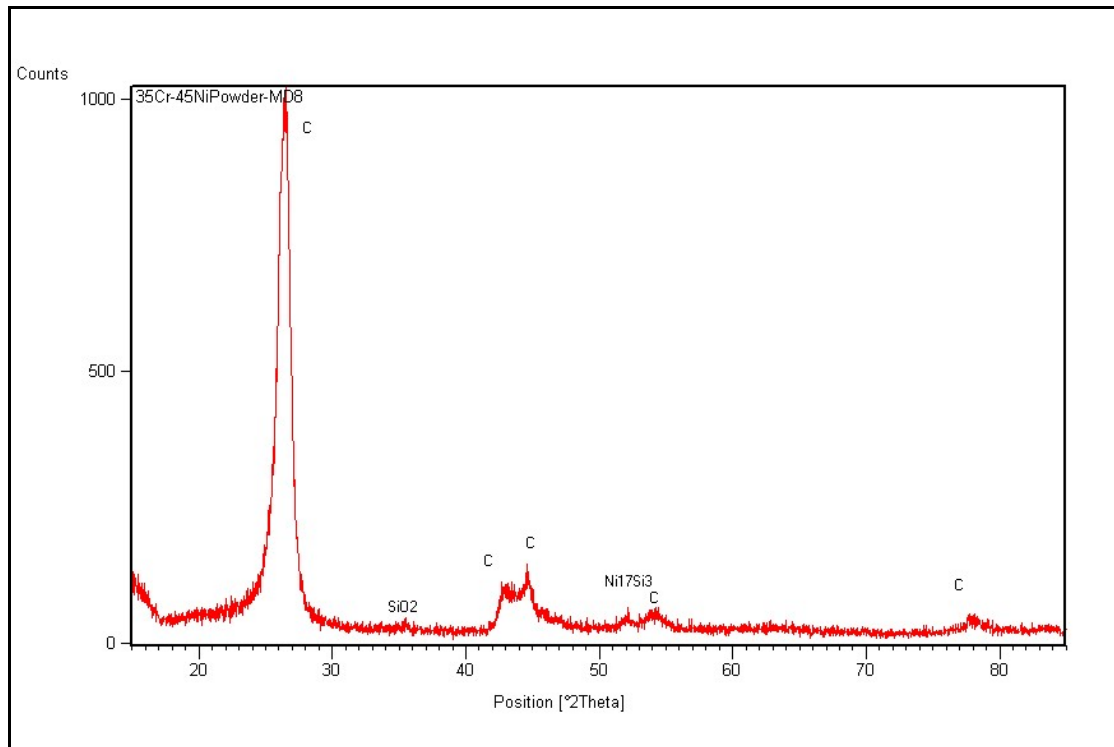
5.2.9 35Cr-45Ni after 500h at 750°C



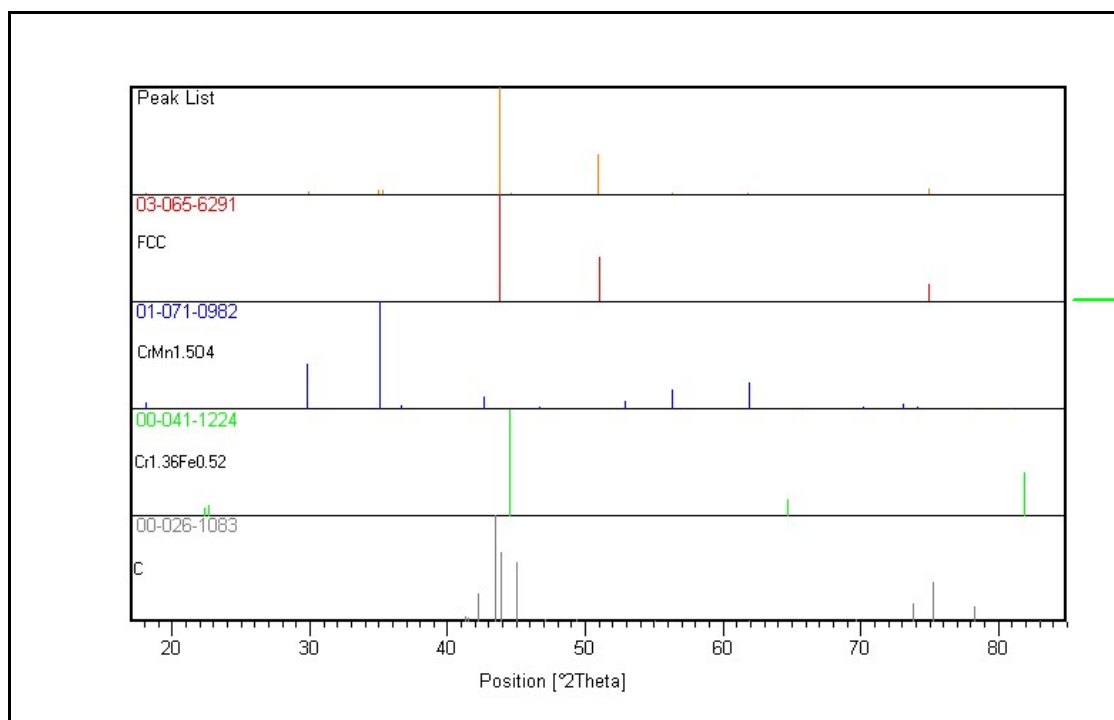
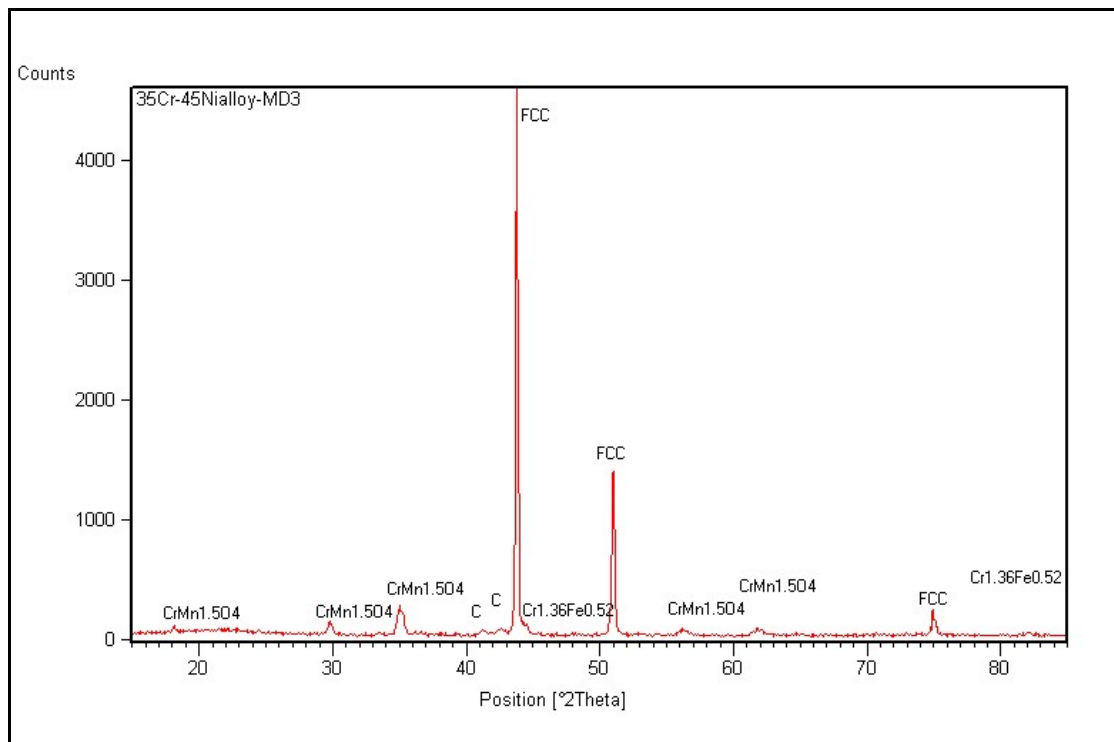
5.2.10 35Cr-45Ni after 1000h at 750°C



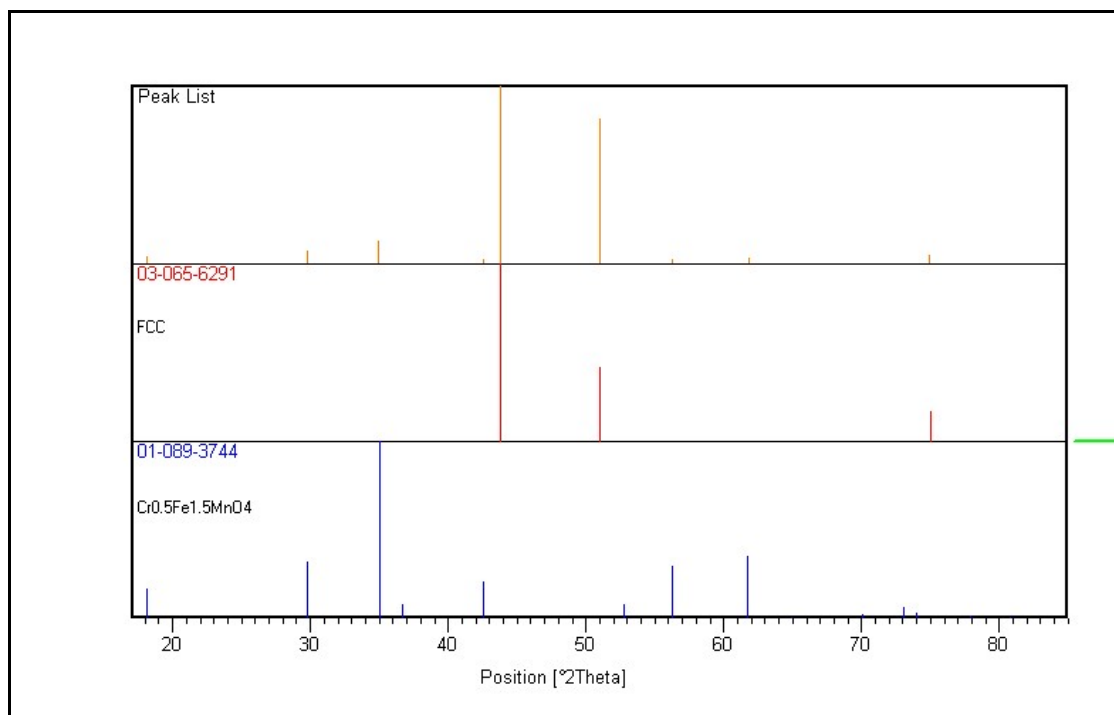
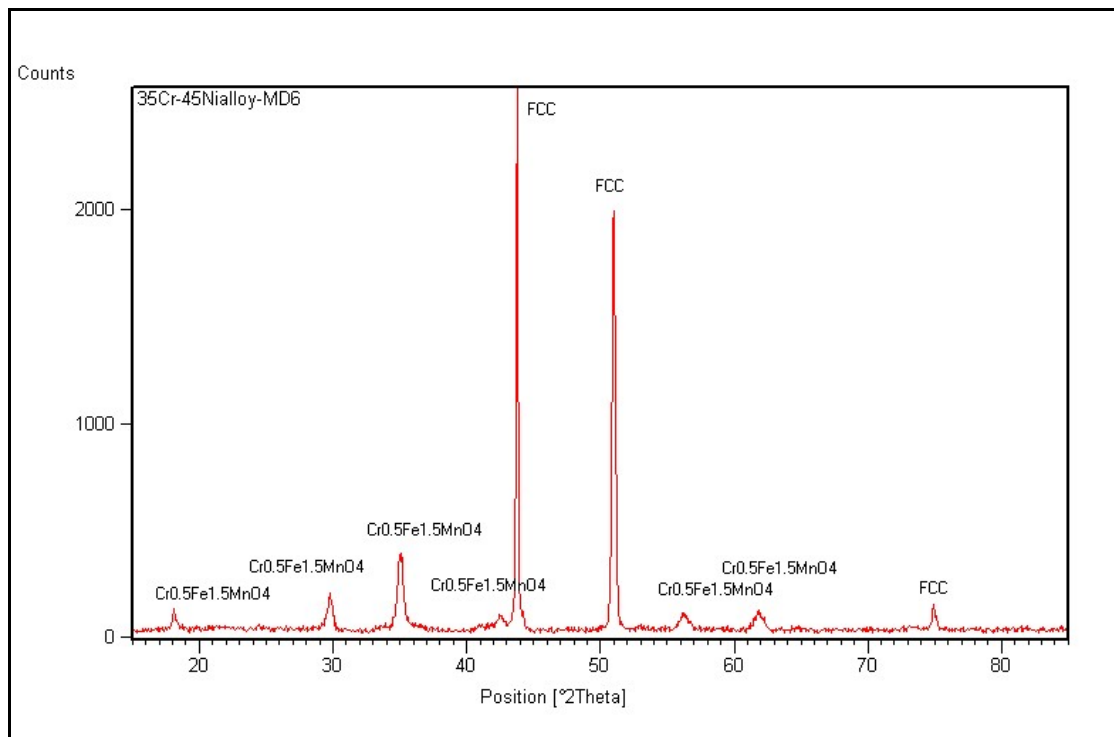
5.2.11 Deposit removed from 35Cr-45Ni after 1000h at 750°C



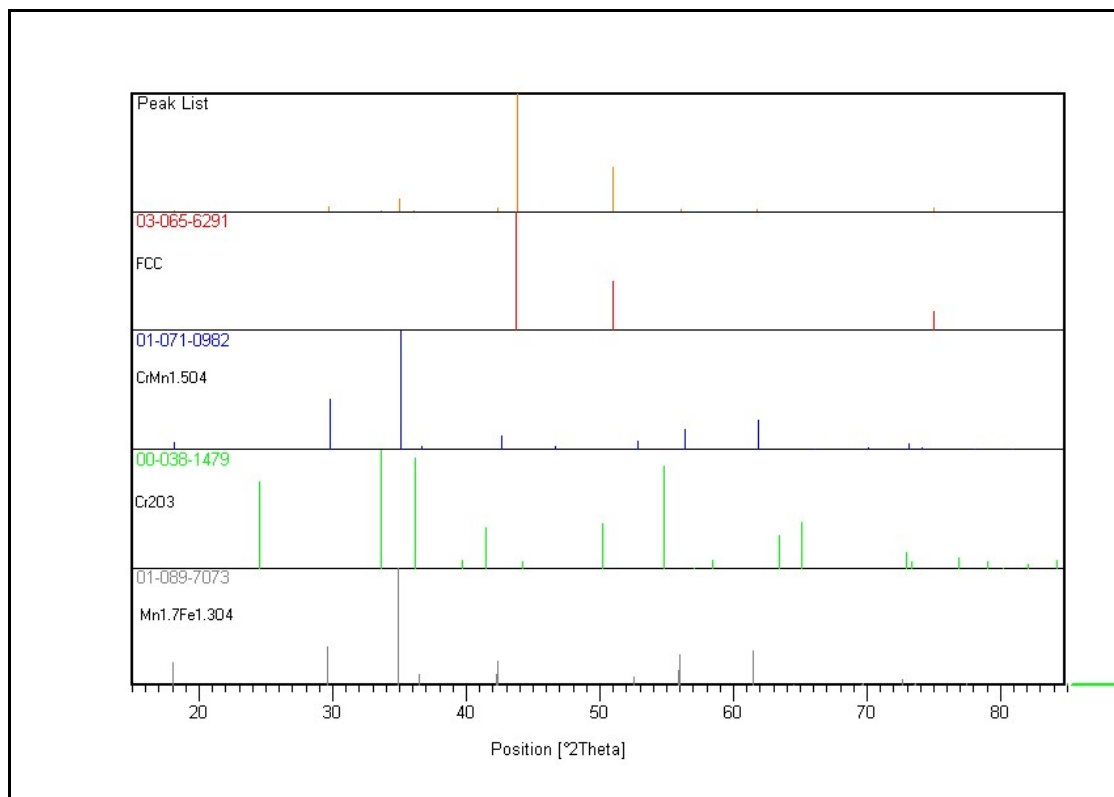
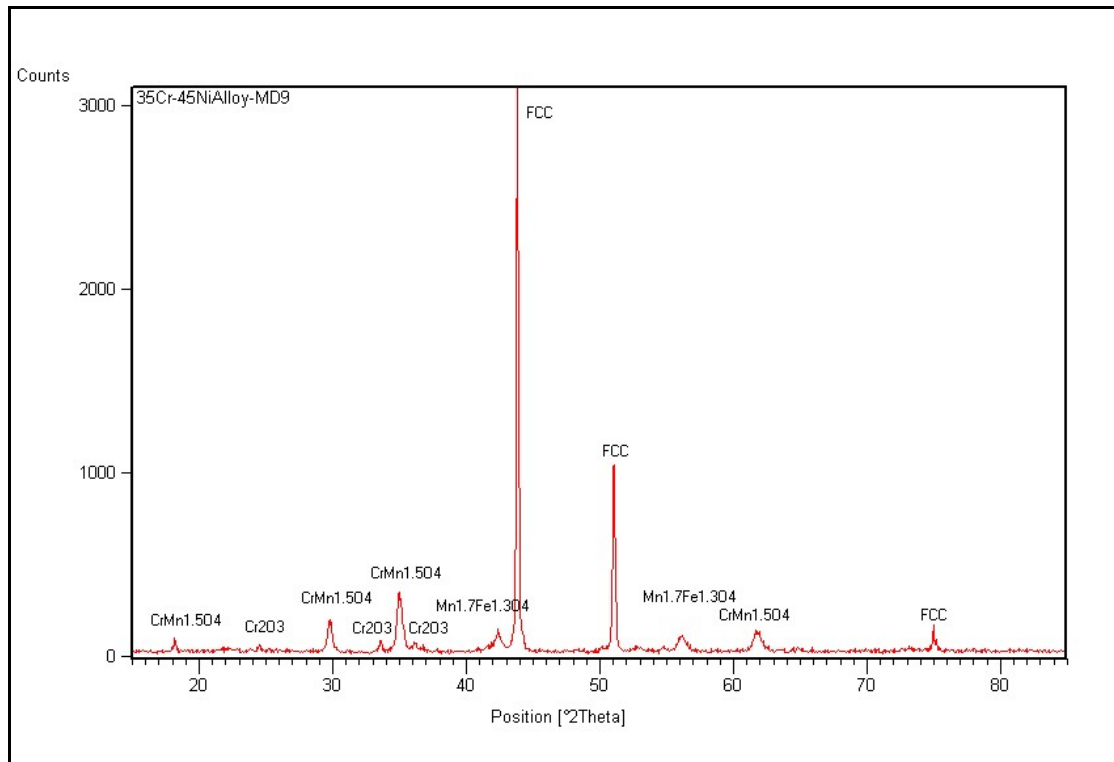
5.2.12 35Cr-45Ni after 100h at 850°C



5.2.13 35Cr-45Ni after 500h at 850°C

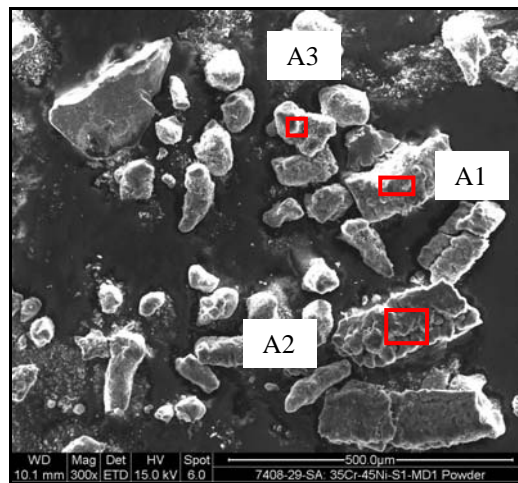


5.2.14 35Cr-45Ni after 1000h at 850°C

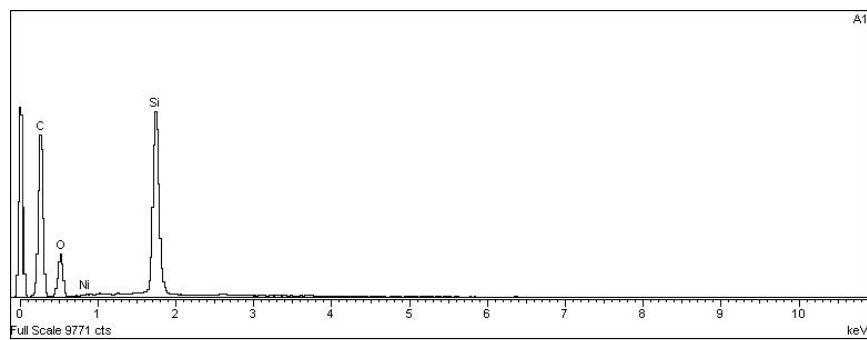


5.3 SEM/EDX Deposits Analysis

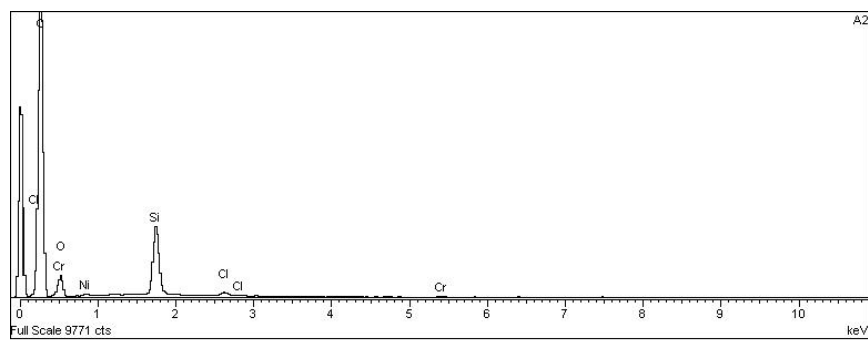
5.3.1 35Cr-45Ni after 100h at 650°C



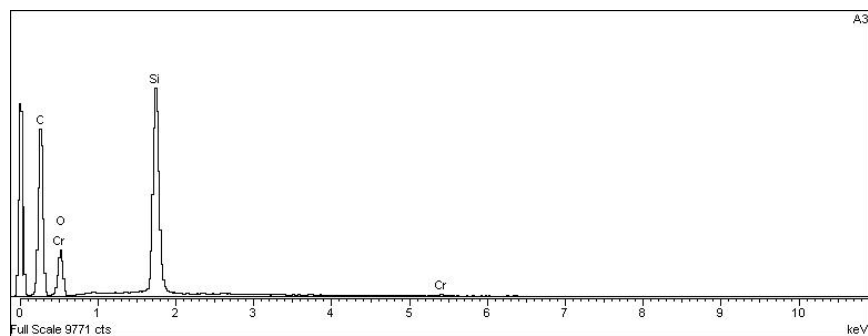
A1



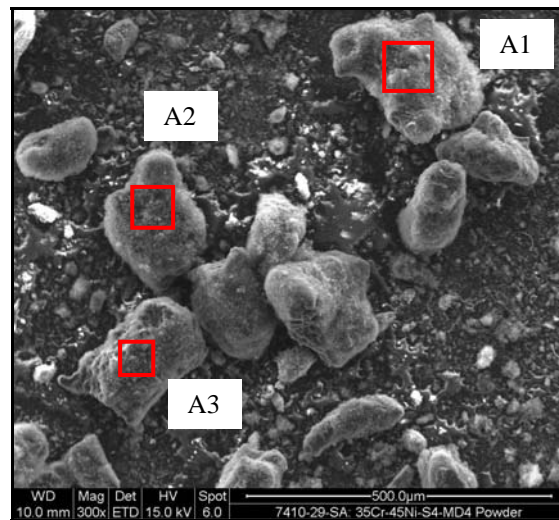
A2



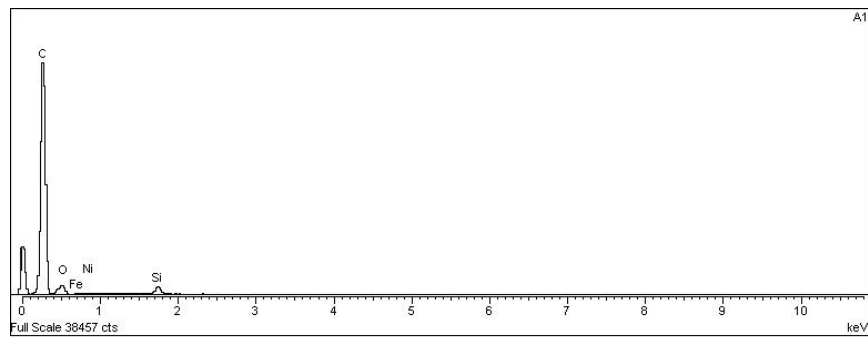
A3



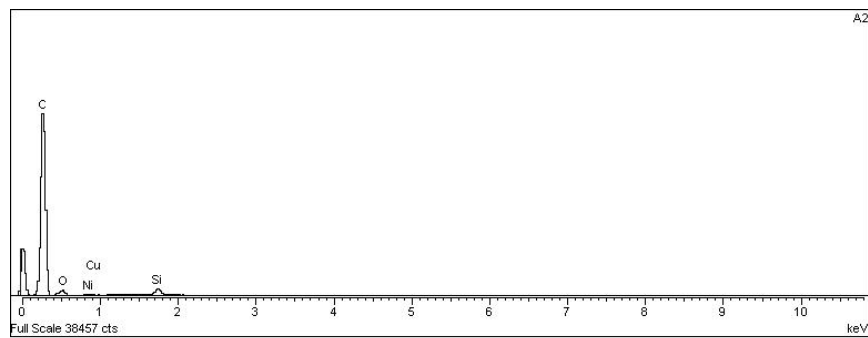
5.3.2 35Cr-45Ni after 500h at 650°C



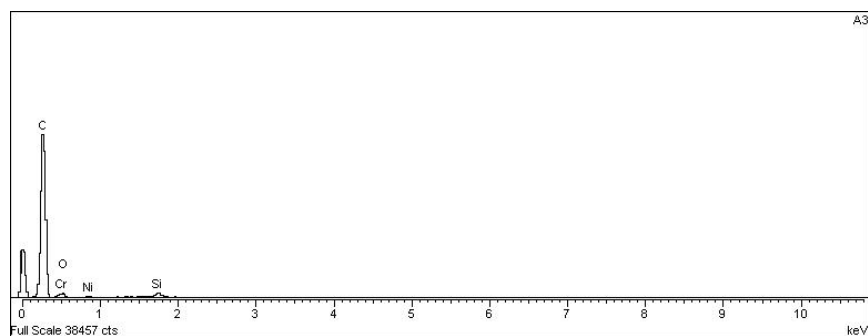
A1



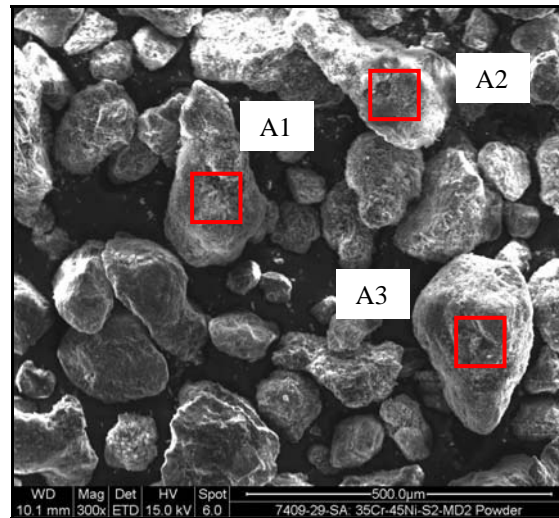
A2



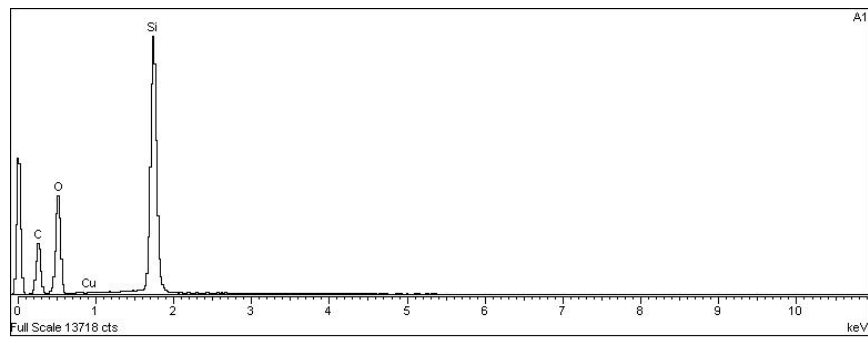
A3



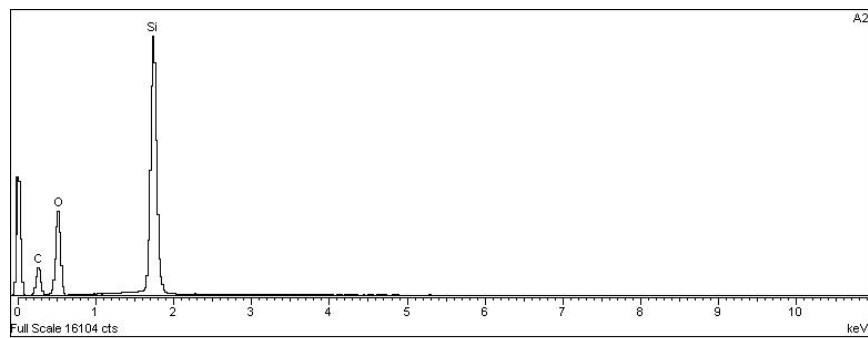
5.3.3 35Cr-45Ni after 100h at 750°C



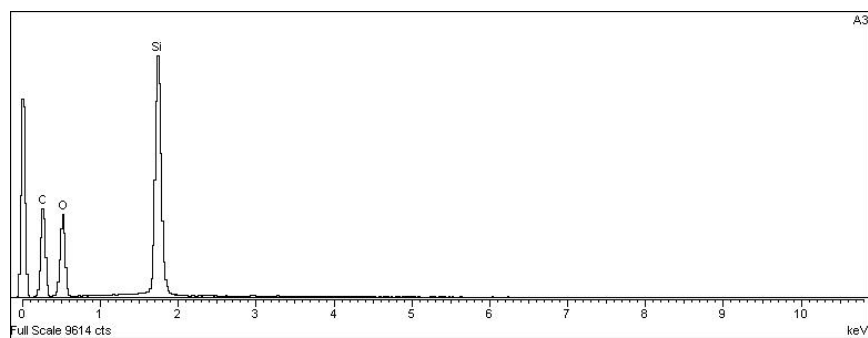
A1



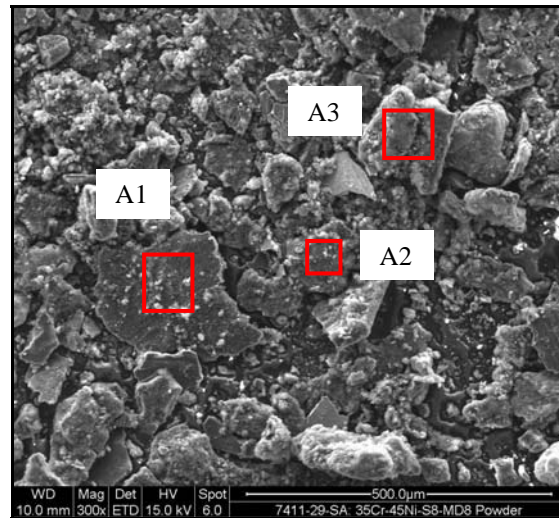
A2



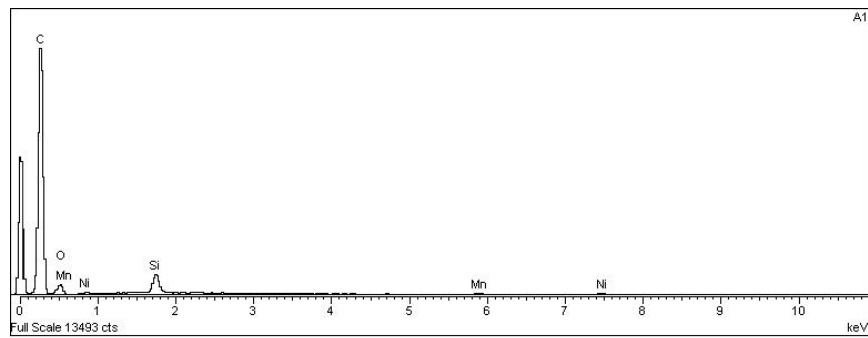
A3



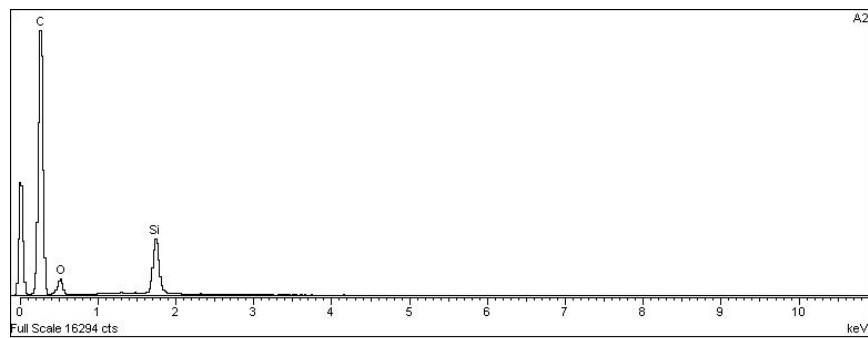
5.3.4 35Cr-45Ni after 1000h at 750°C



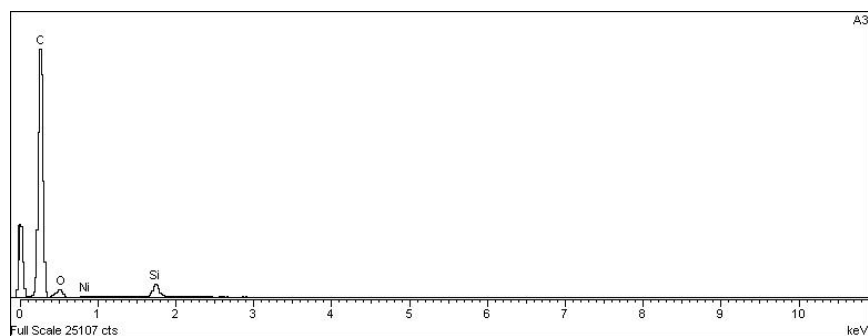
A1



A2

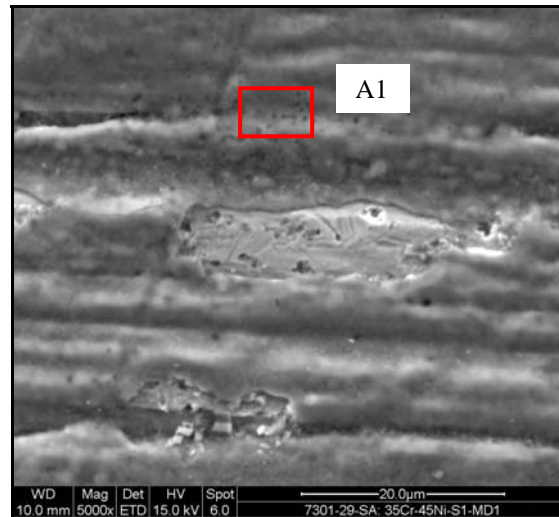


A3

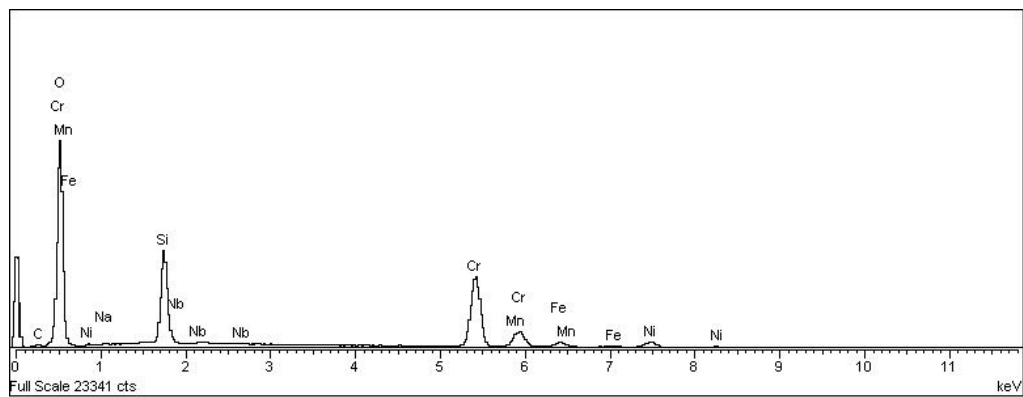


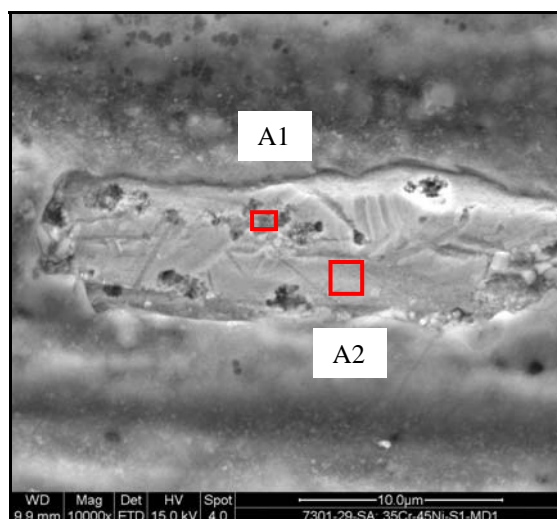
5.4 Surface Analyses

4.1.1 35Cr-45Ni after 100h at 650°C

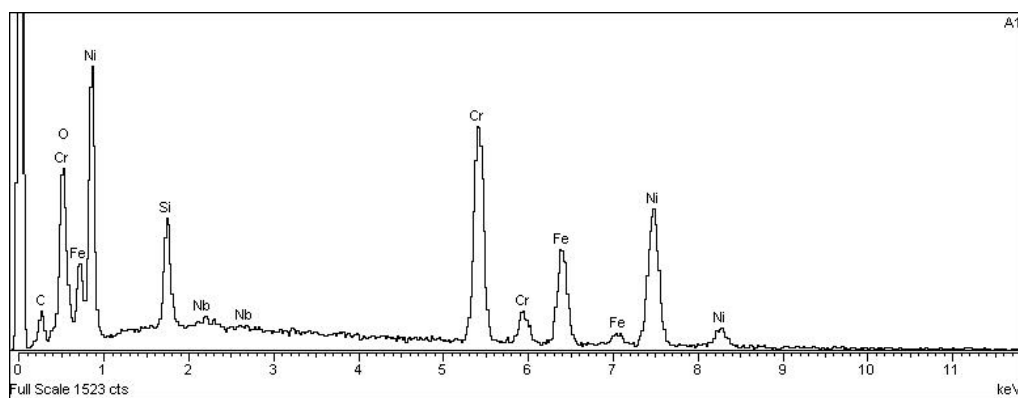


A1

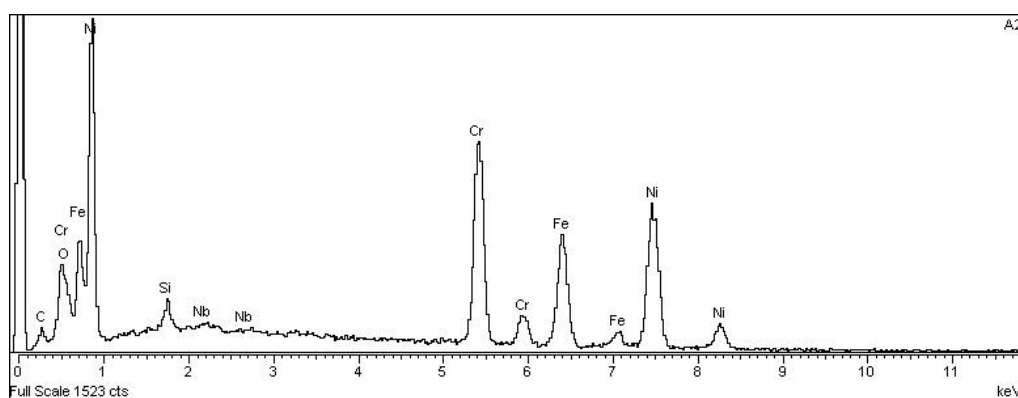




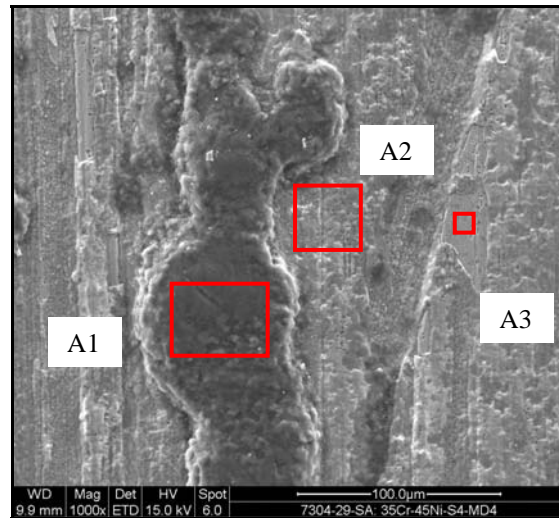
A1



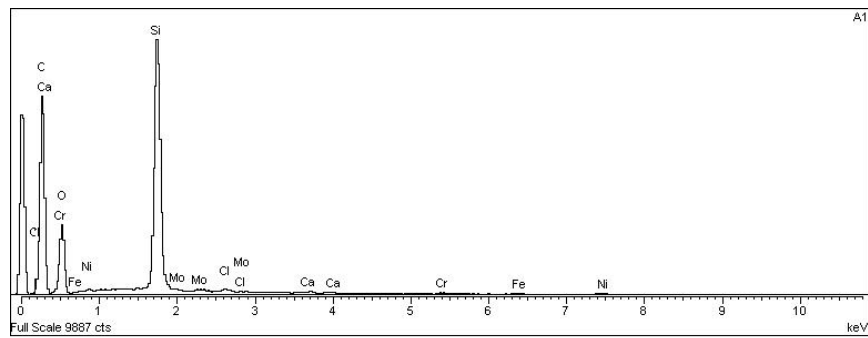
A2



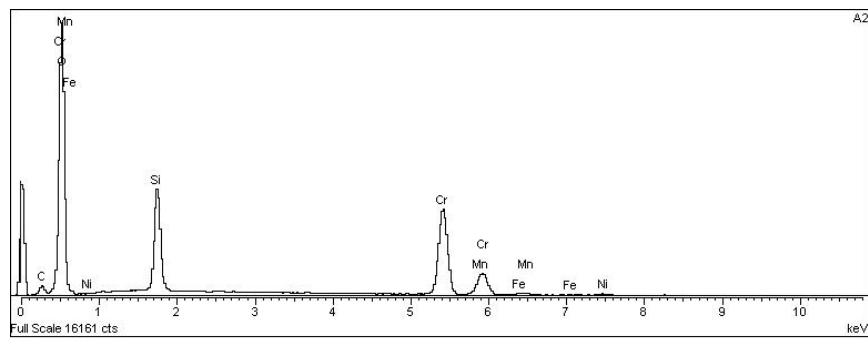
4.1.1 35Cr-45Ni after 500h at 650°C



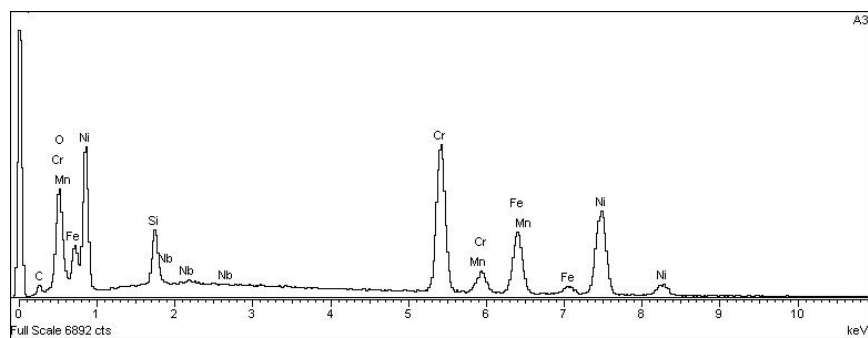
A1



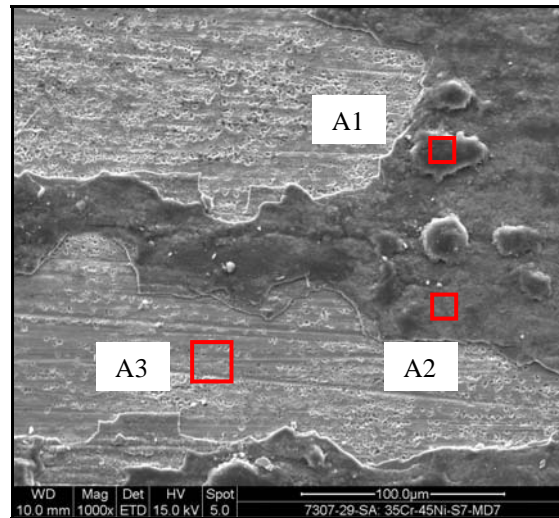
A2



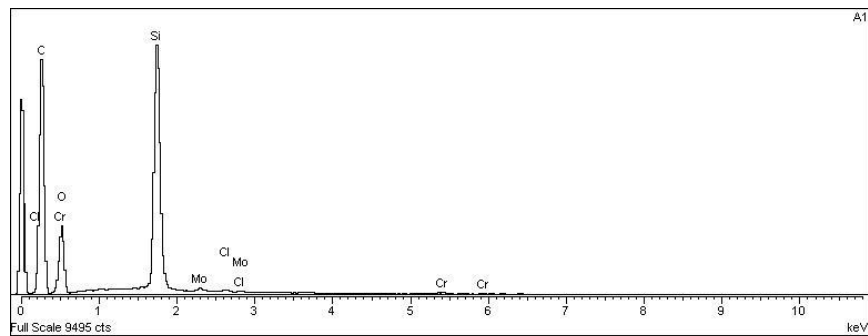
A3



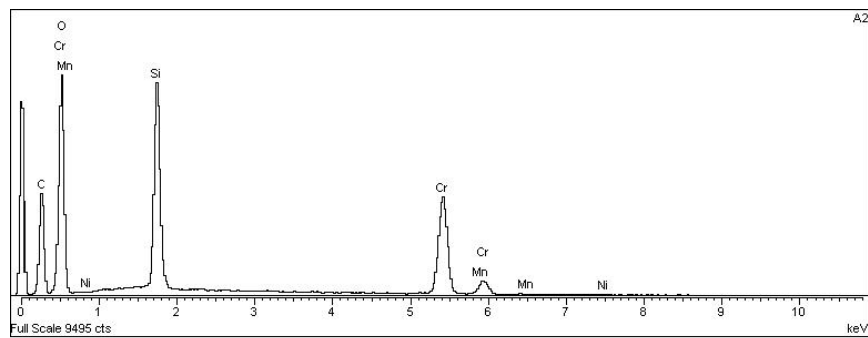
4.1.1 35Cr-45Ni after 1000h at 650°C



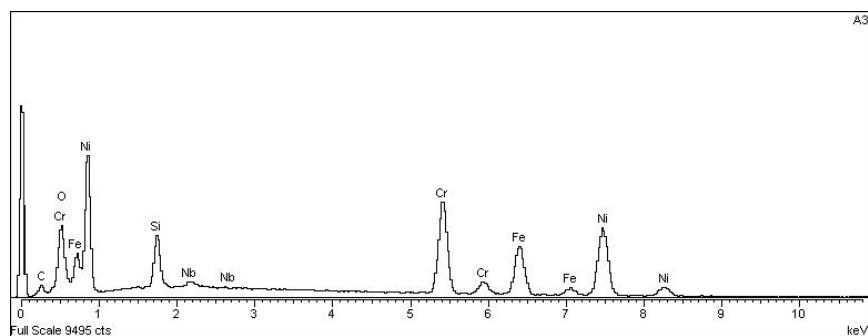
A1

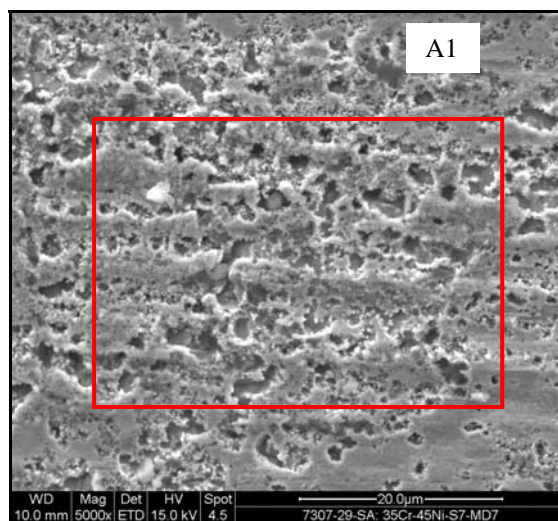


A2

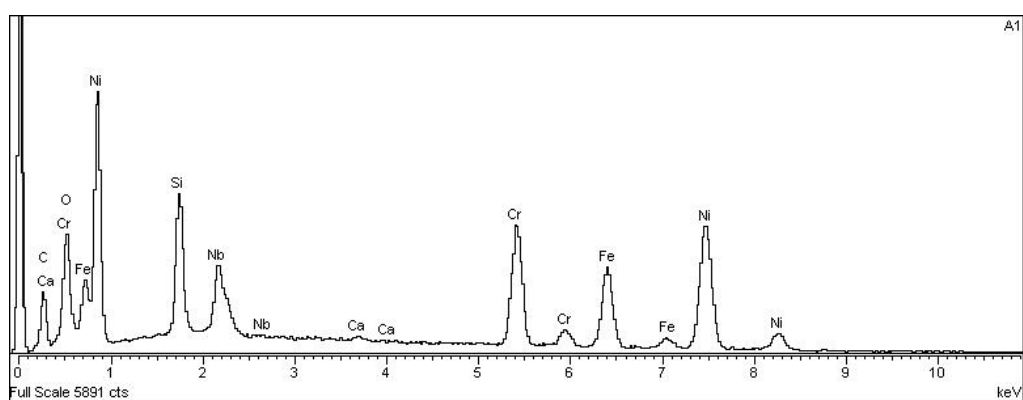


A3

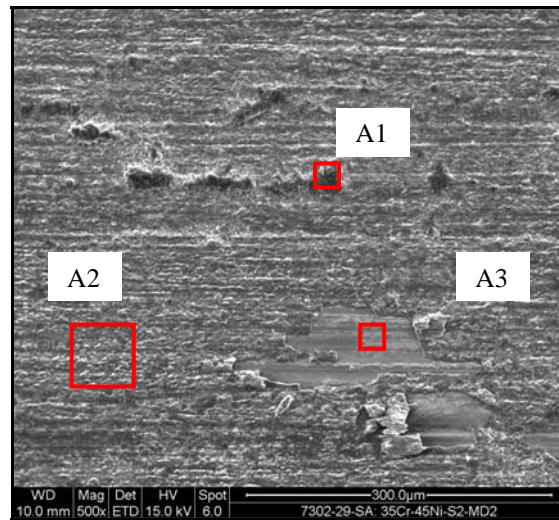




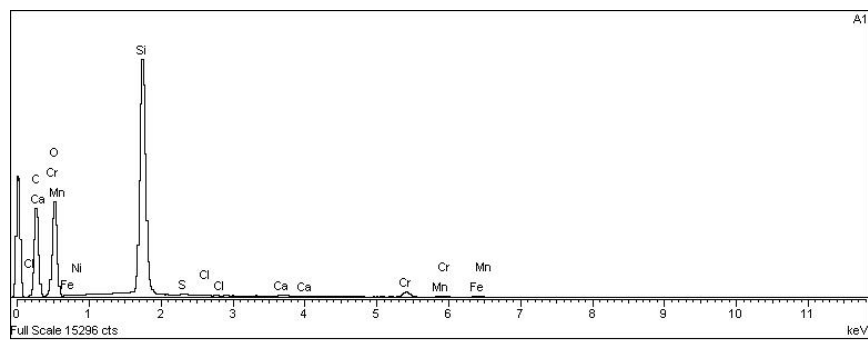
A1



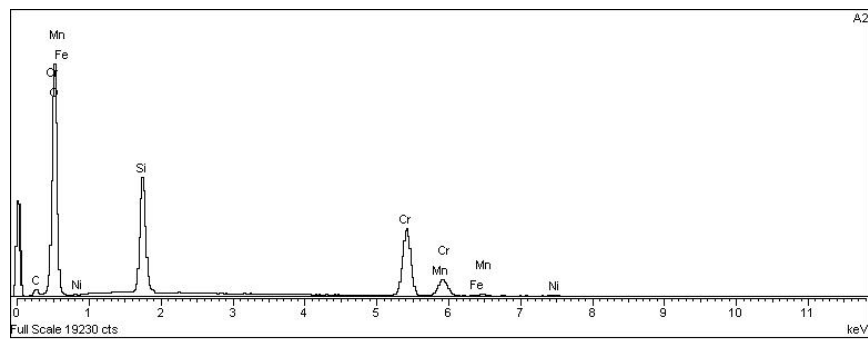
4.1.1 35Cr-45Ni after 100h at 750°C



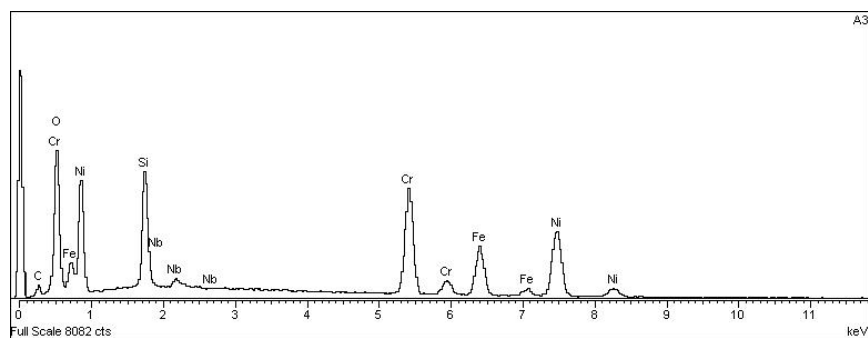
A1



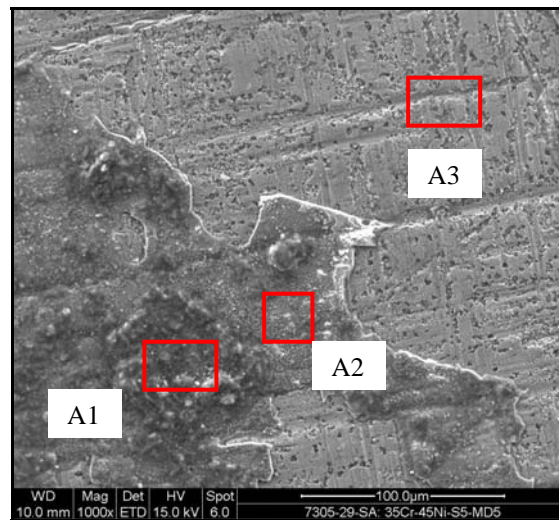
A2



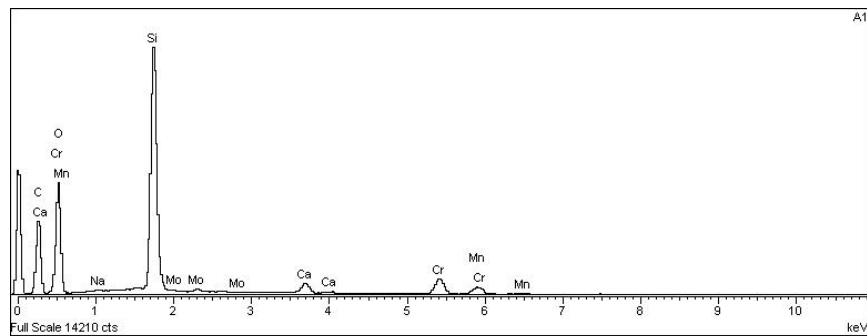
A3



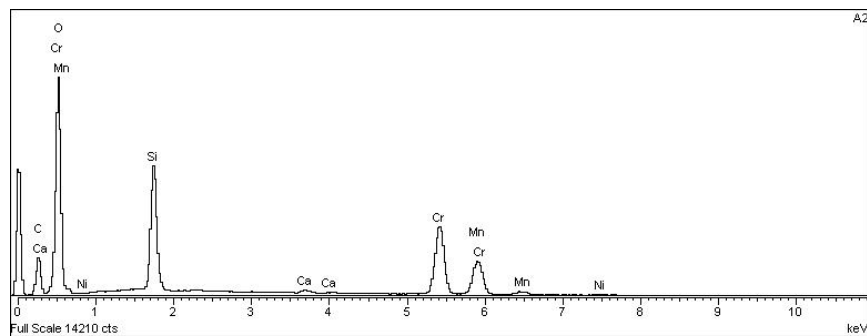
4.1.1 35Cr-45Ni after 500h at 750°C



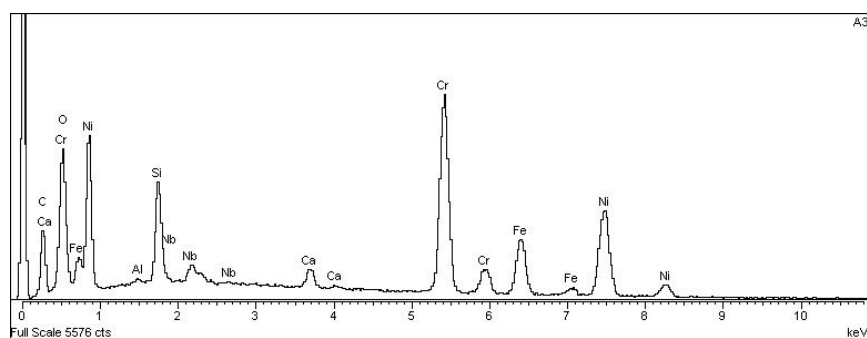
A1



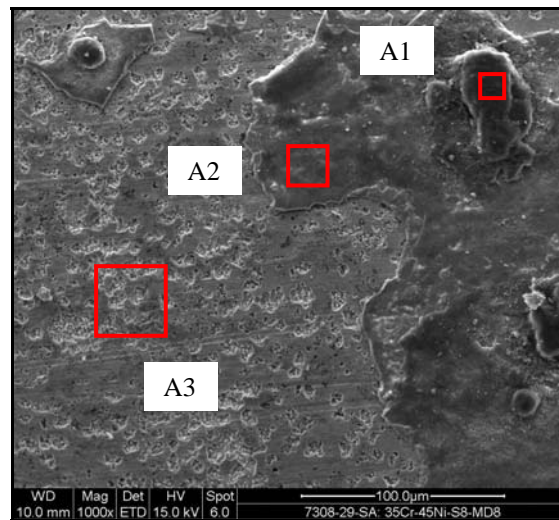
A2



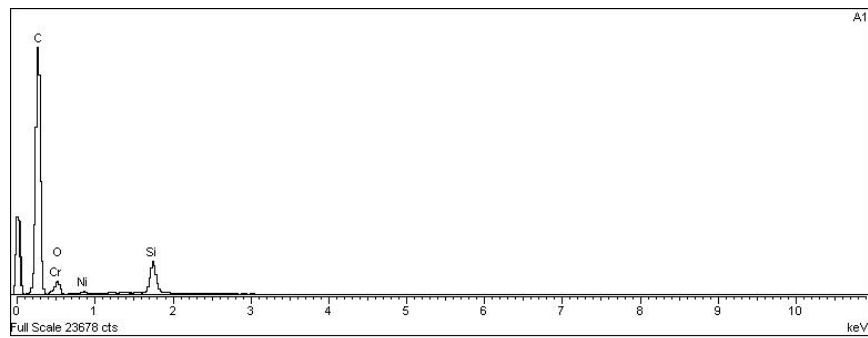
A3



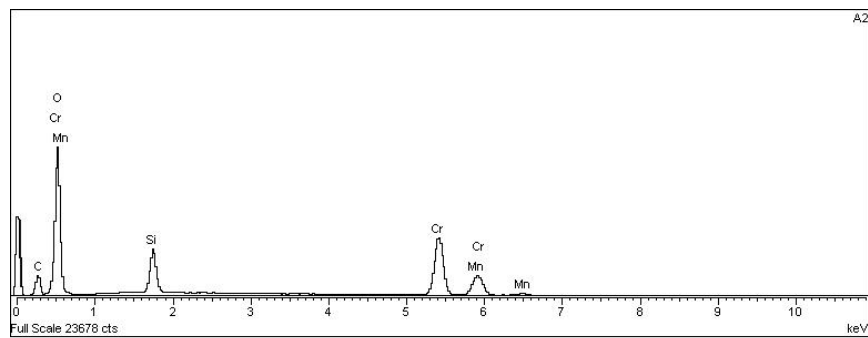
4.1.1 35Cr-45Ni after 1000h at 750°C



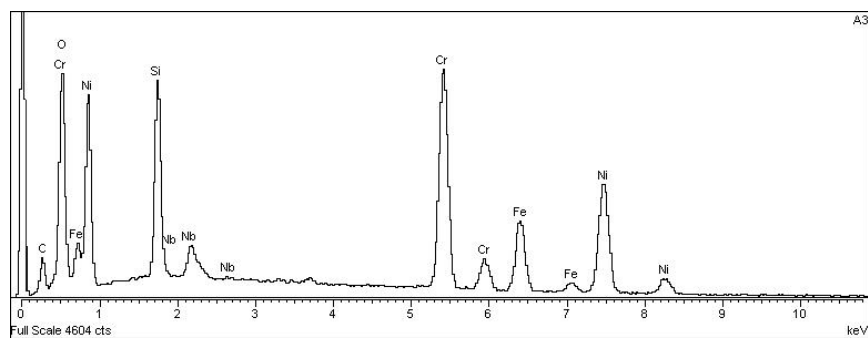
A1



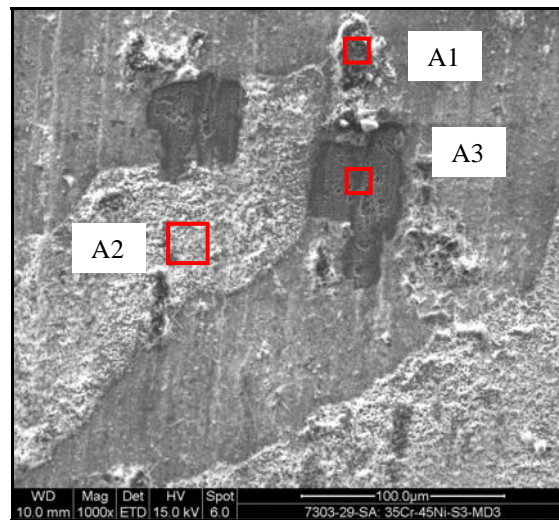
A2



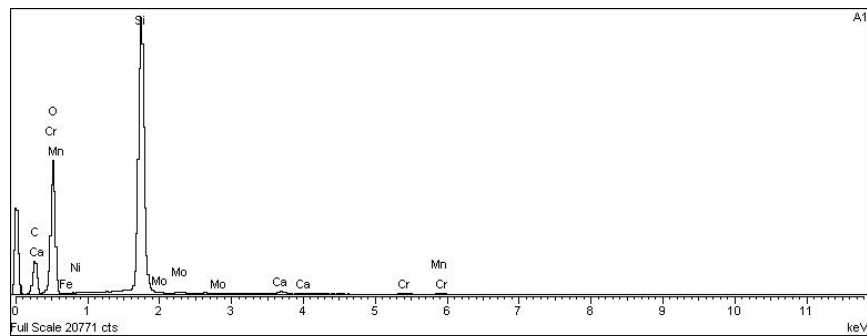
A3



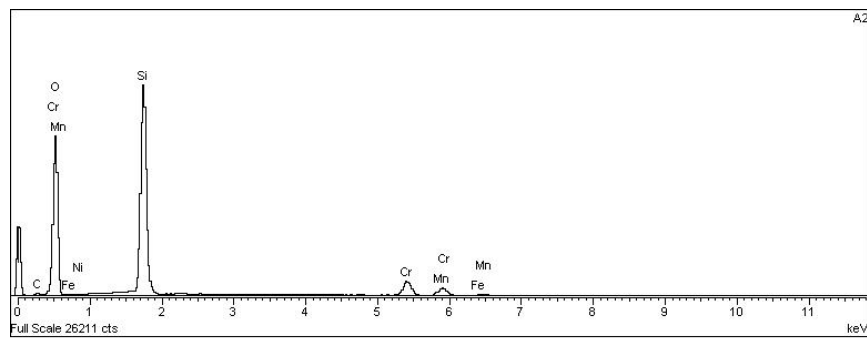
4.1.1 35Cr-45Ni after 100h at 850°C



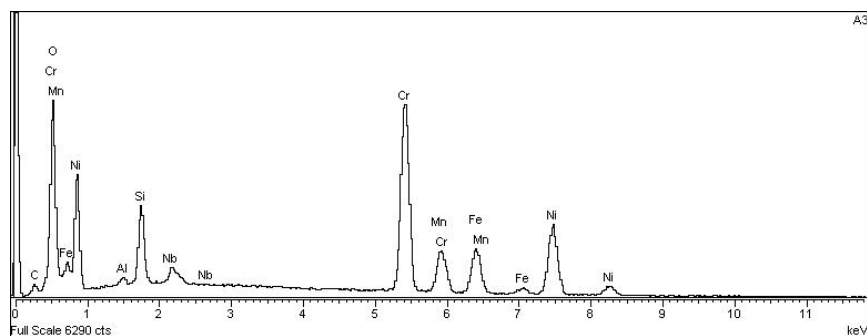
A1



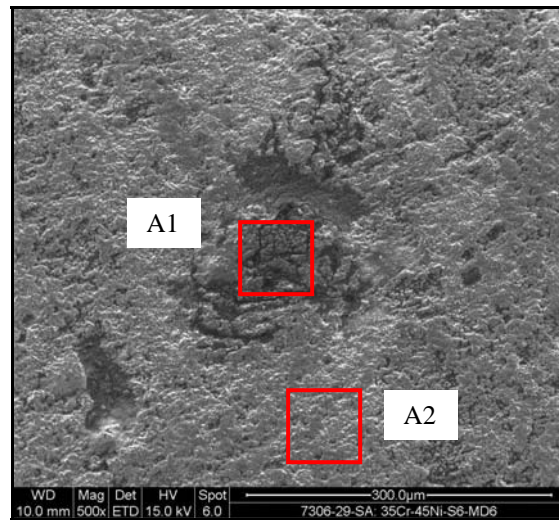
A2



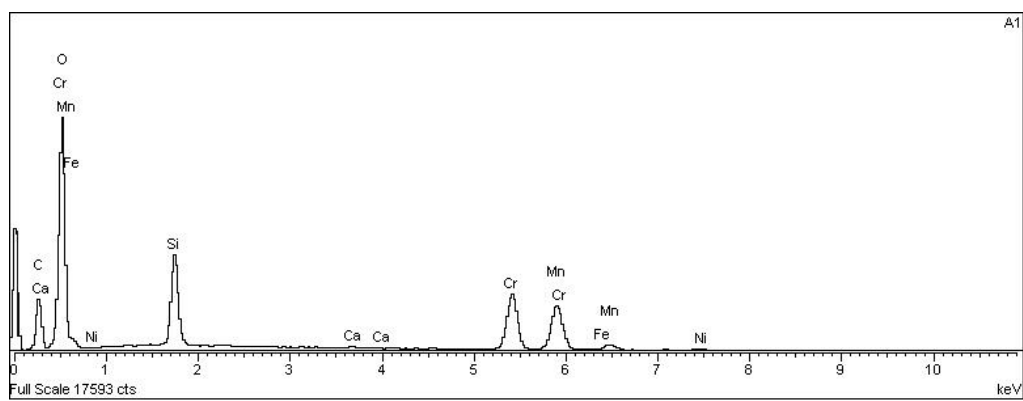
A3



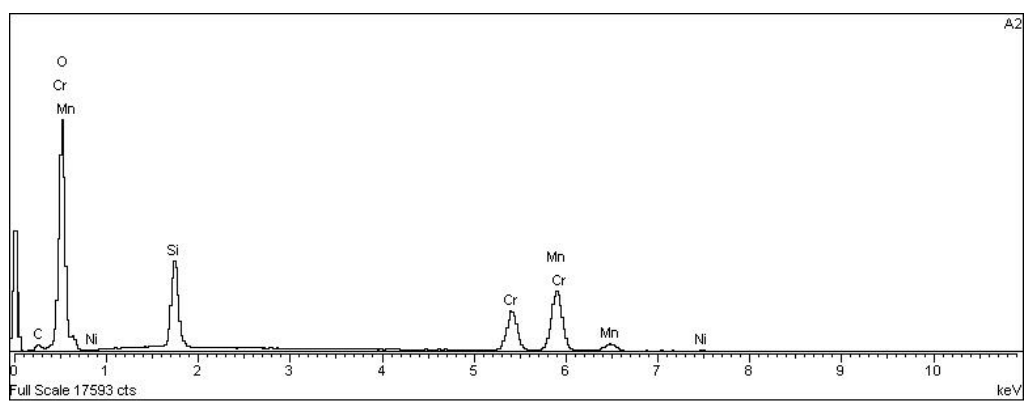
4.1.1 35Cr-45Ni after 500h at 850°C

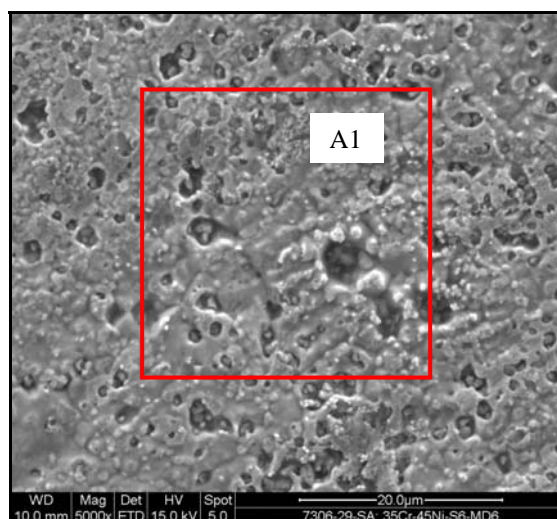


A1

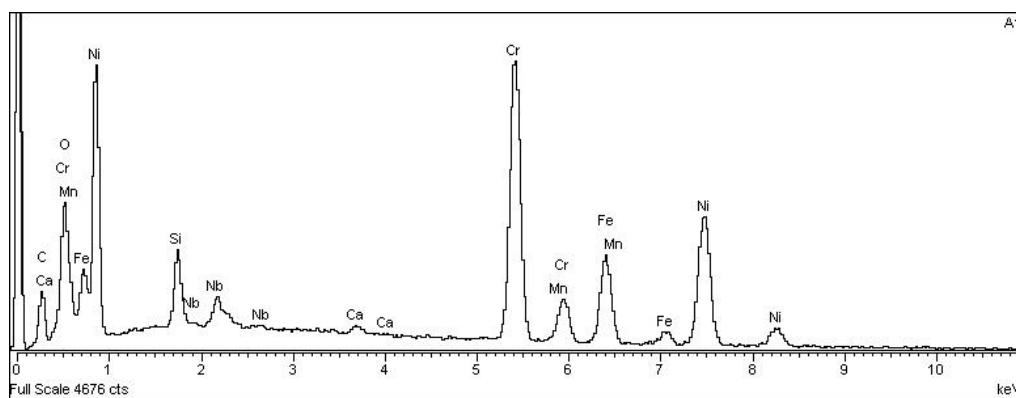


A2

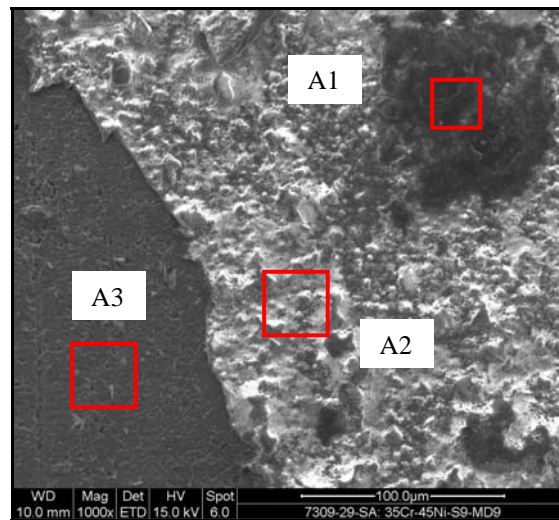




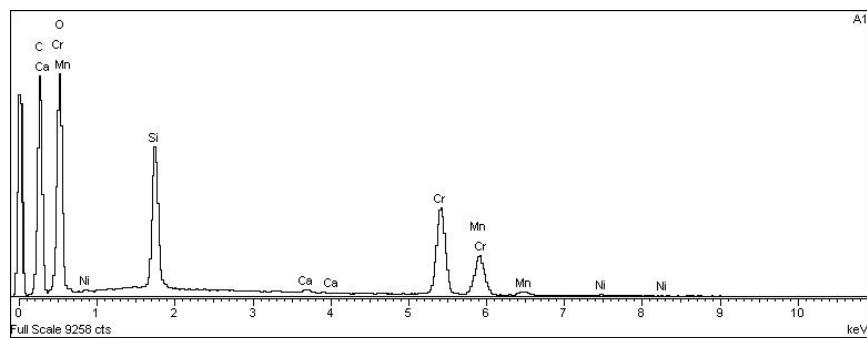
A1



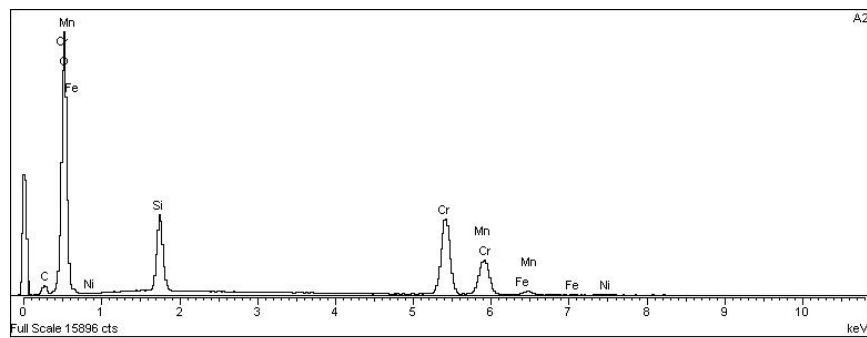
5.4.9 35Cr-45Ni after 1000h at 850°C



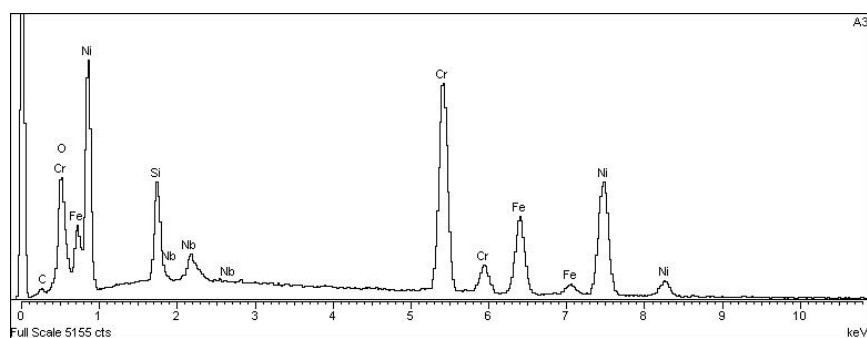
A1



A2

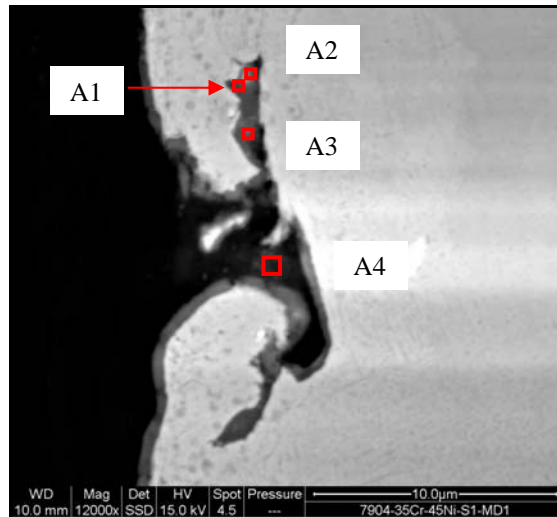


A3

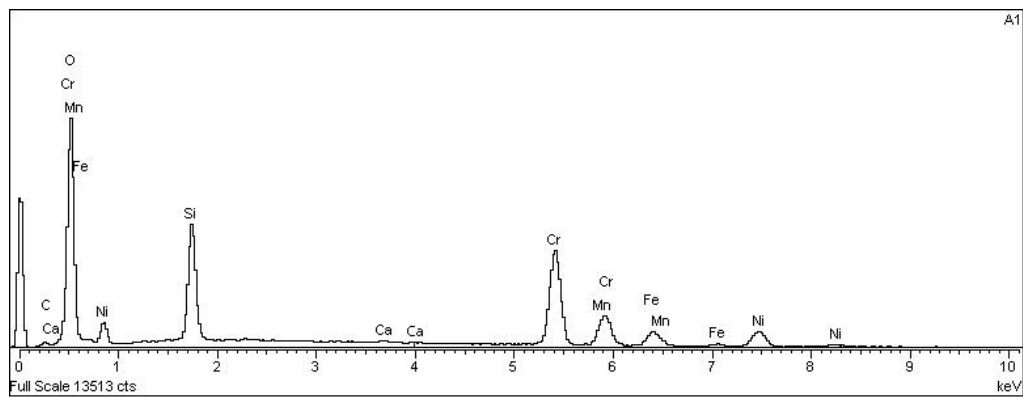


5.5 Metallographic Examination

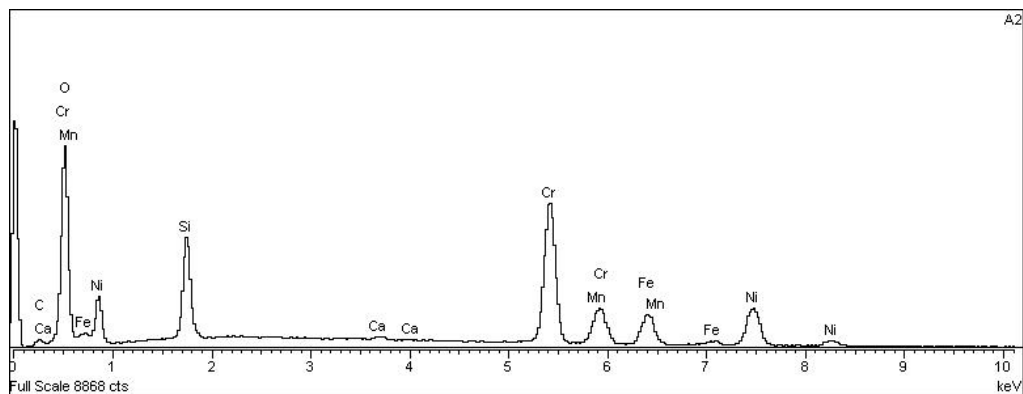
4.1.1 35Cr-45Ni after 100h at 650°C



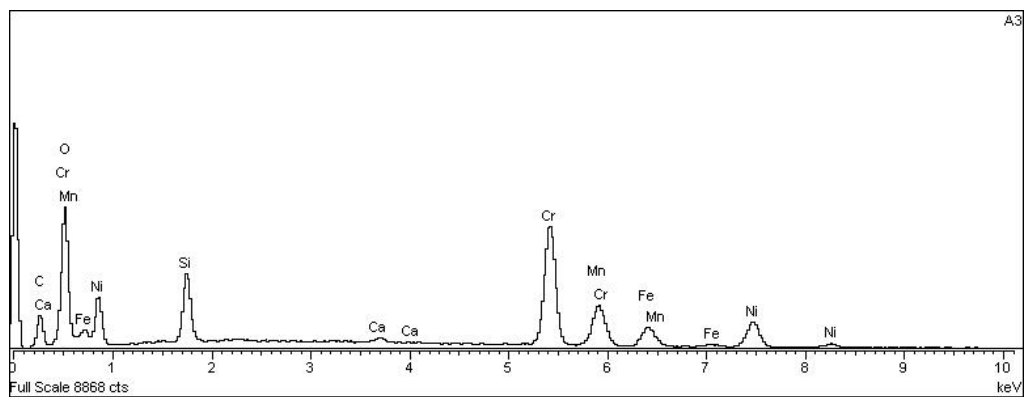
A1



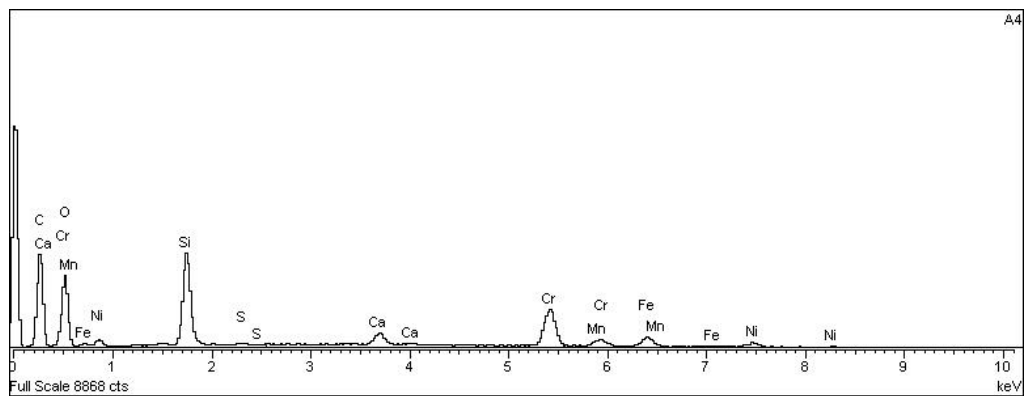
A2

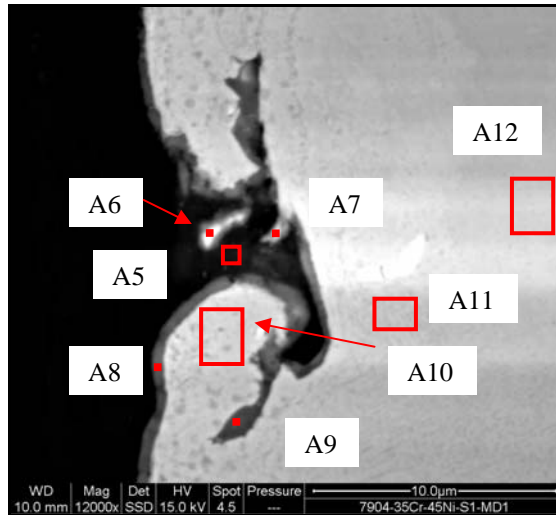


A3

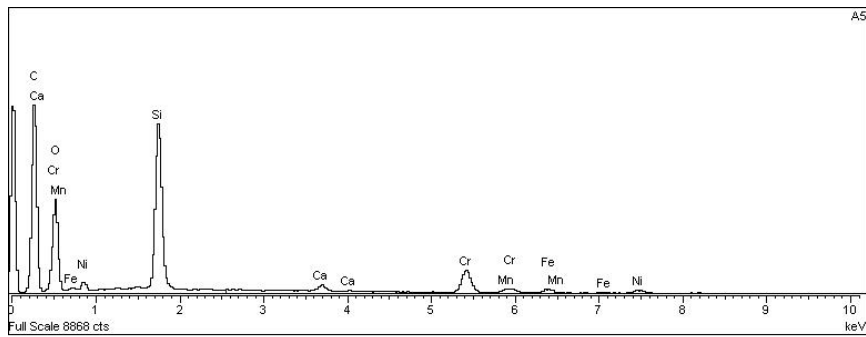


A4

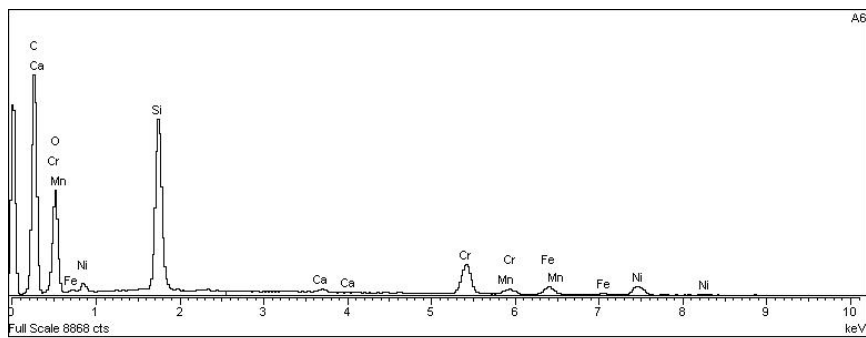




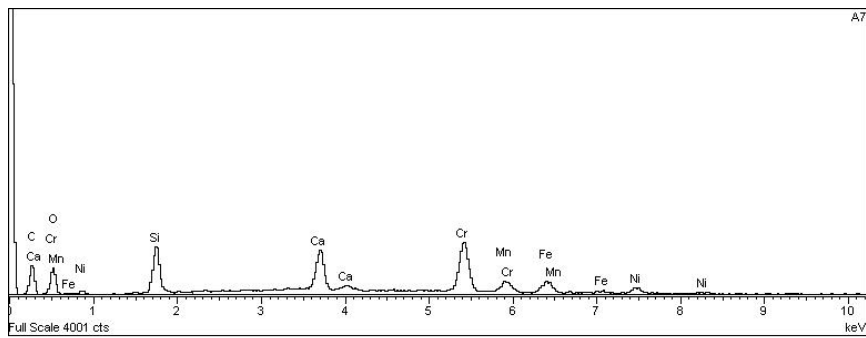
A5



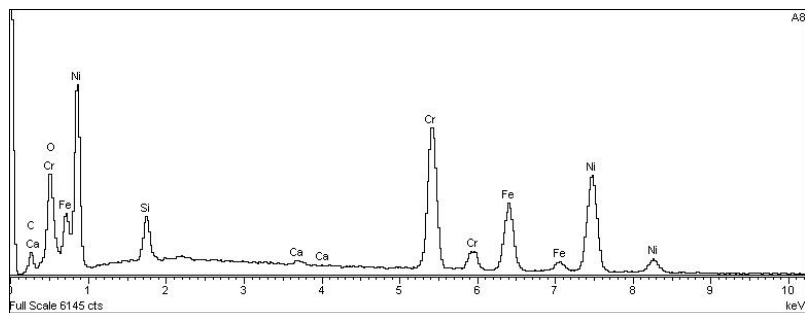
A6



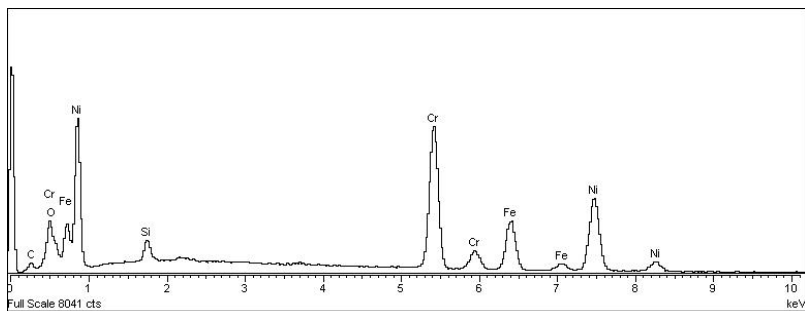
A7



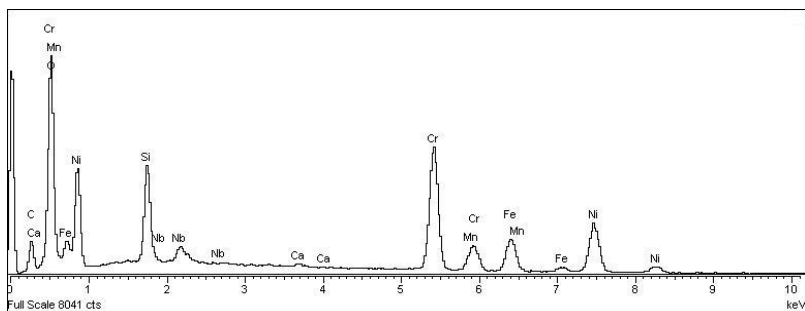
A8



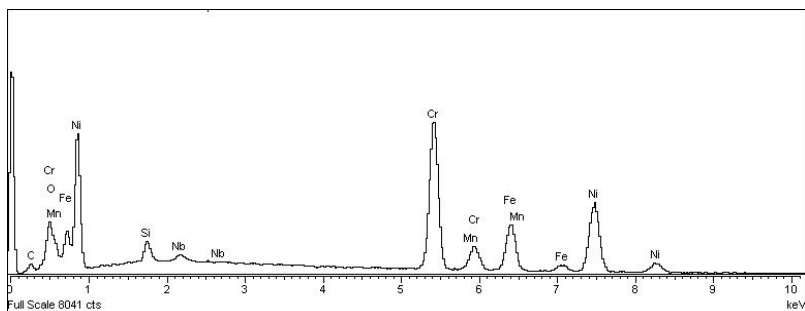
A9



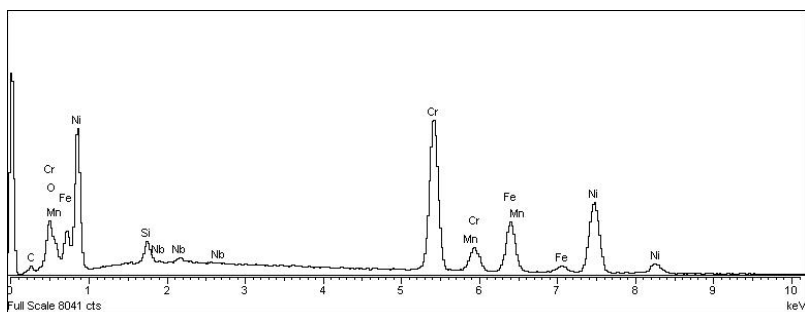
A10



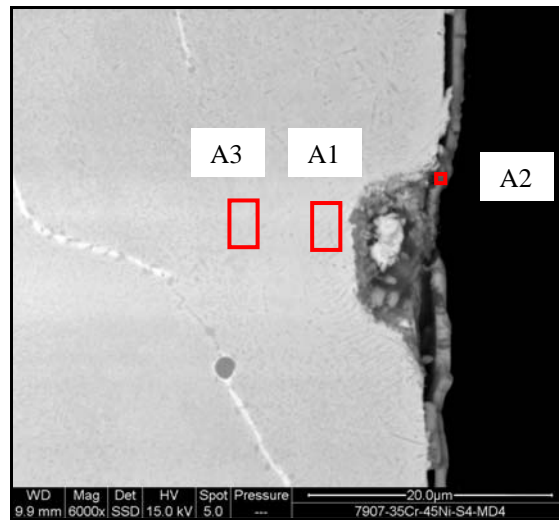
A11



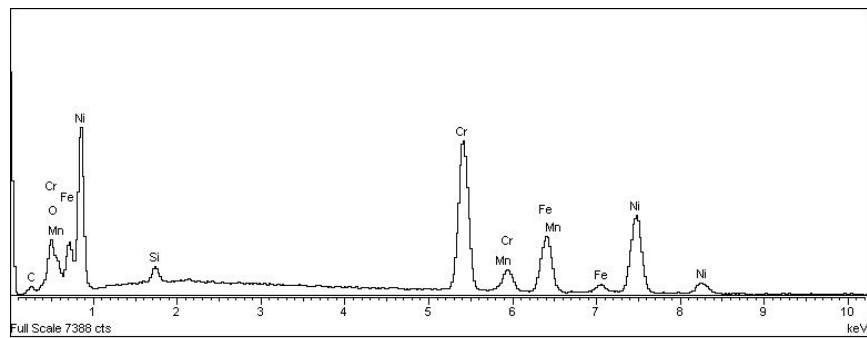
A12



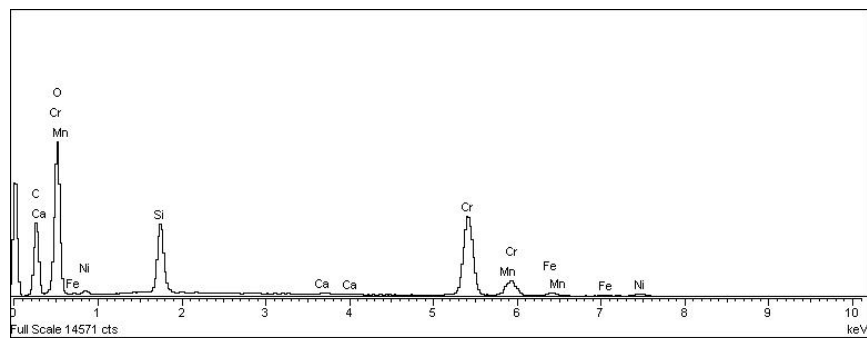
4.1.1 35Cr-45Ni after 500h at 650°C



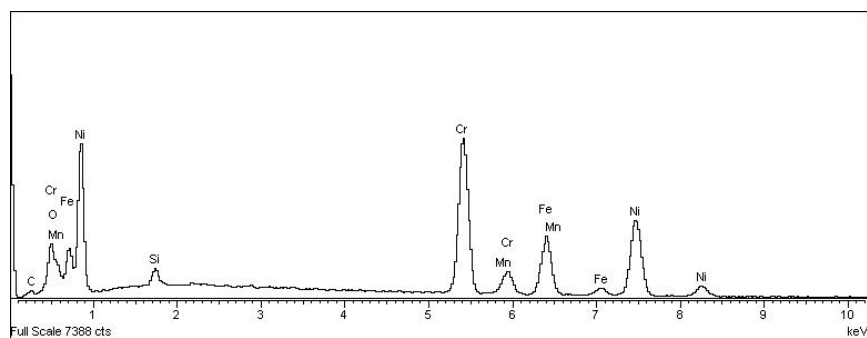
A1

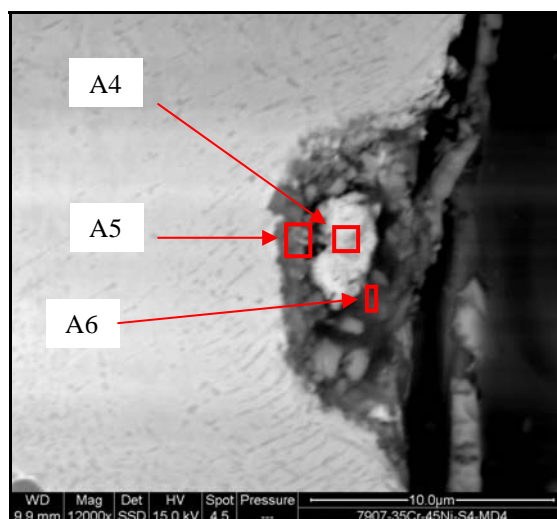


A2

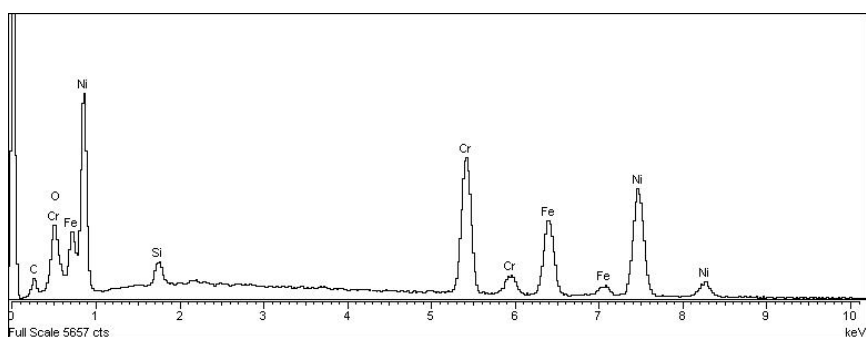


A3

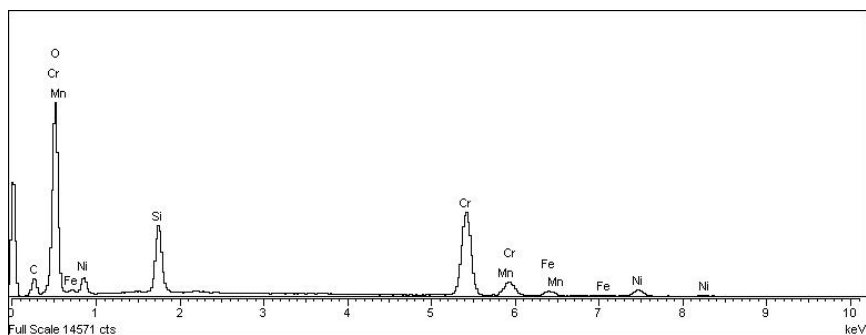




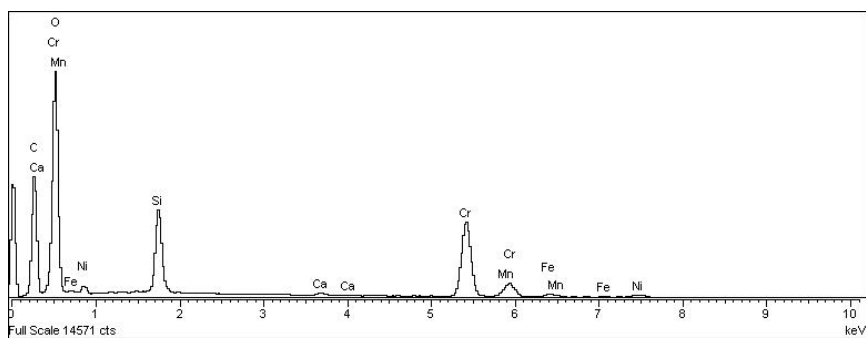
A4



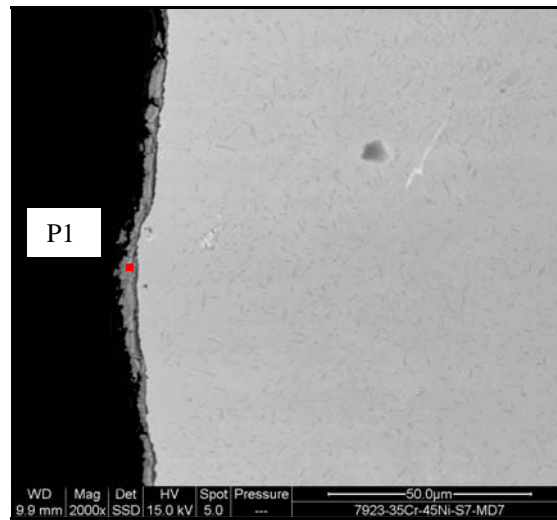
A5



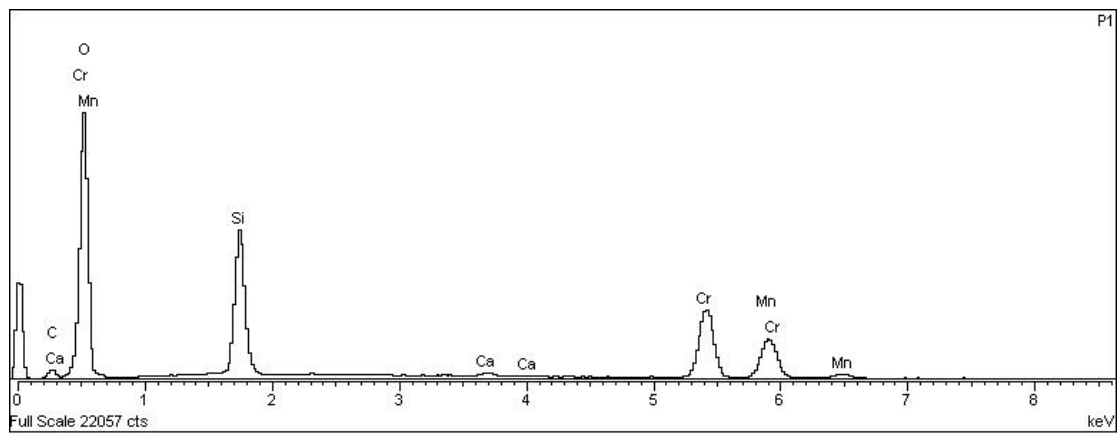
A6

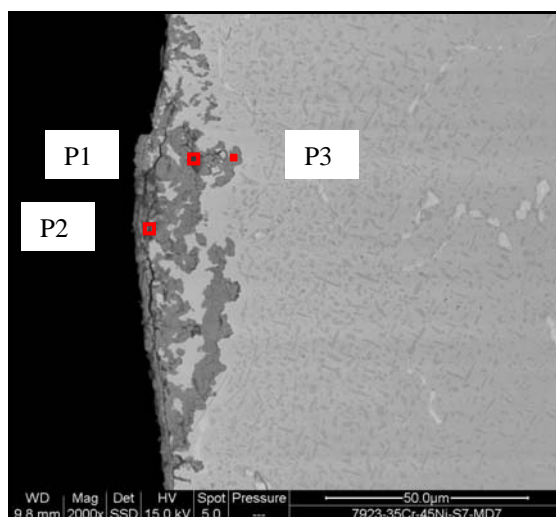


4.1.1 5Cr-45Ni after 1000h at 650°C

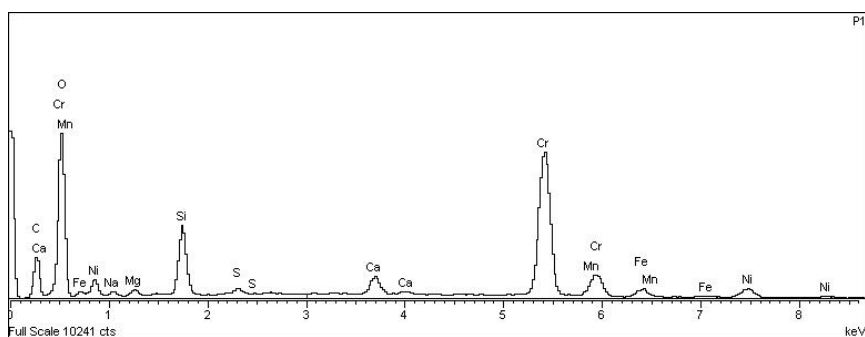


P1

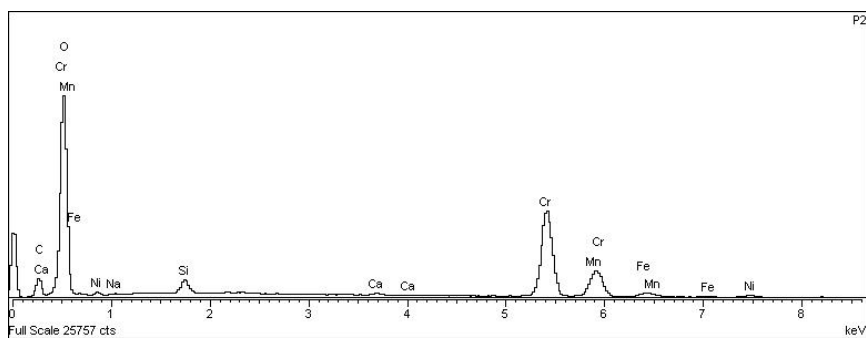




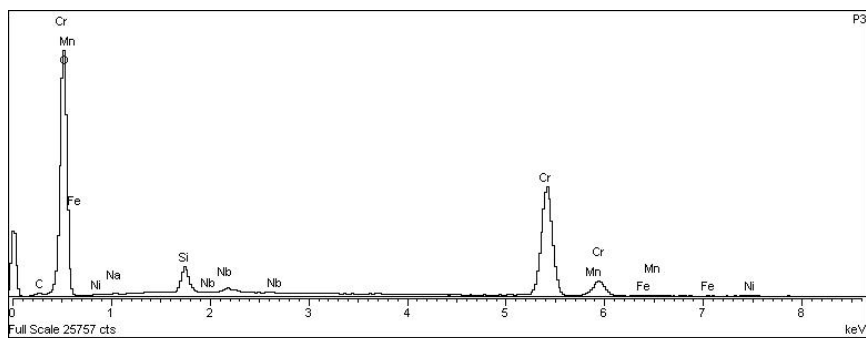
P1

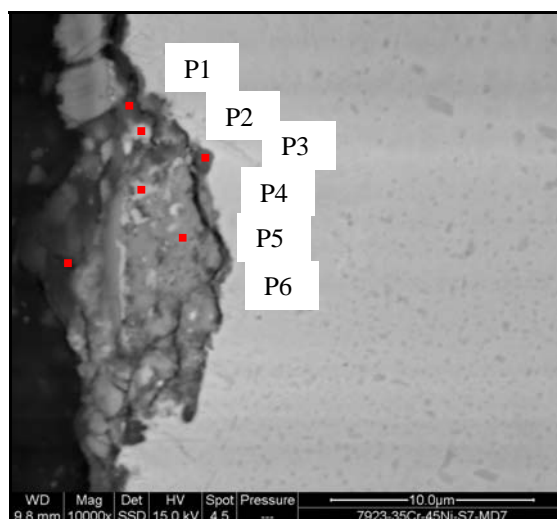


P2

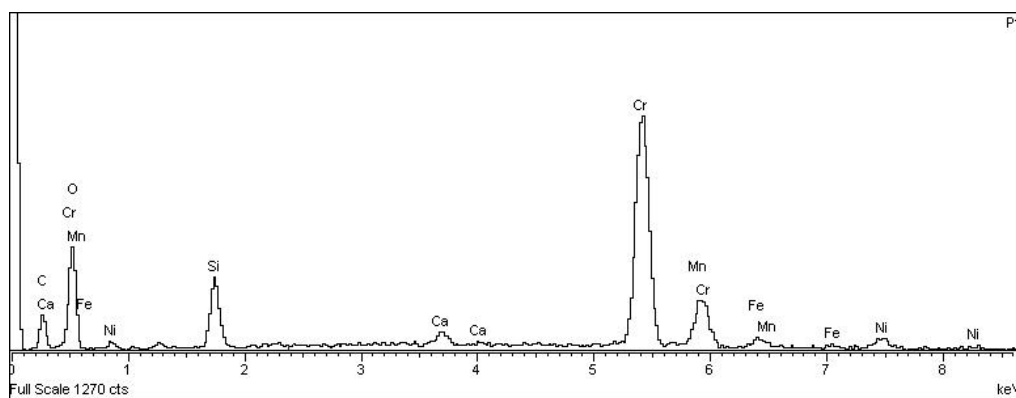


P3

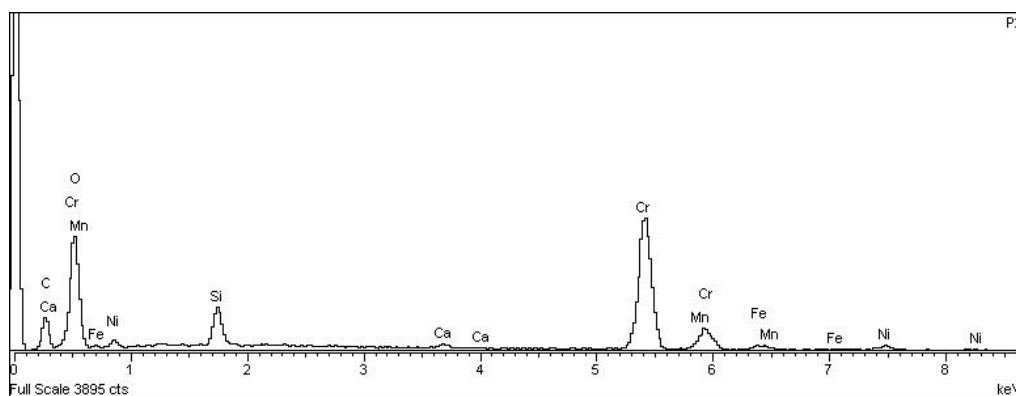




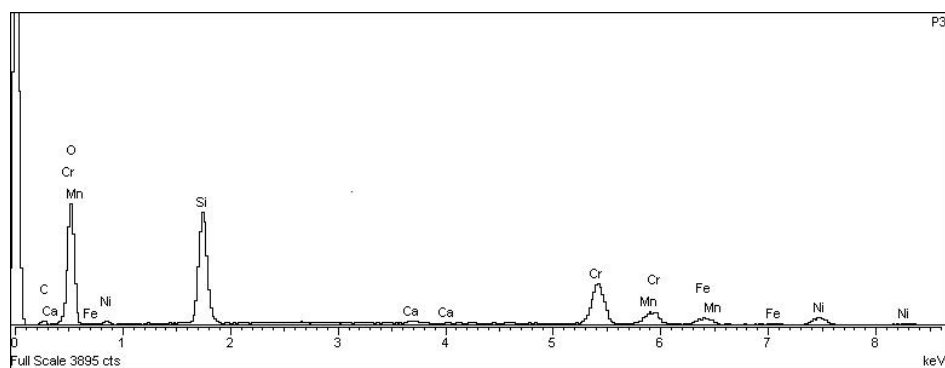
P1



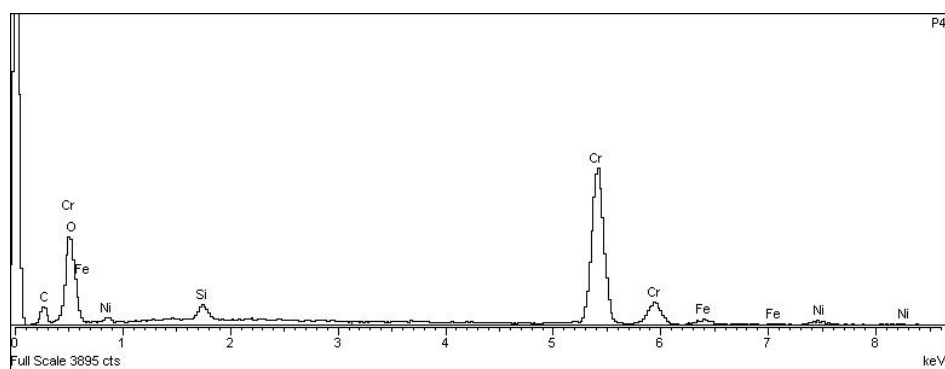
P2



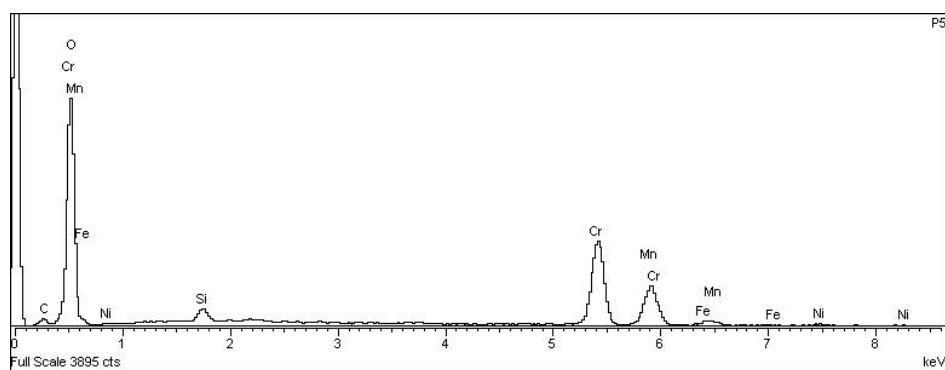
P3



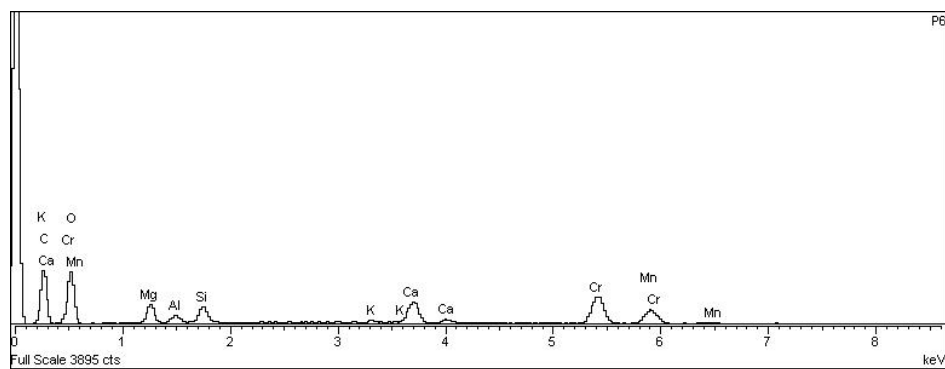
P4



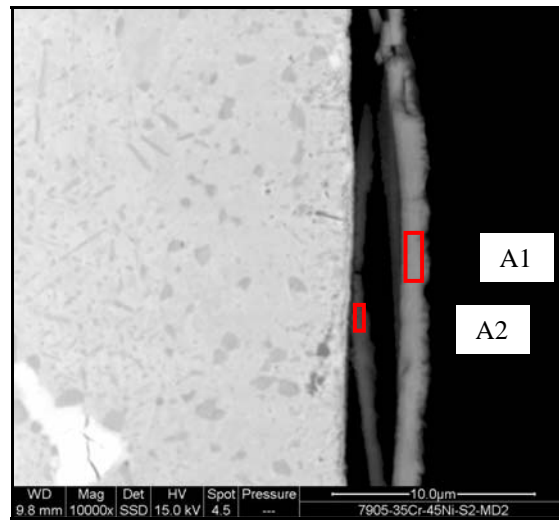
P5



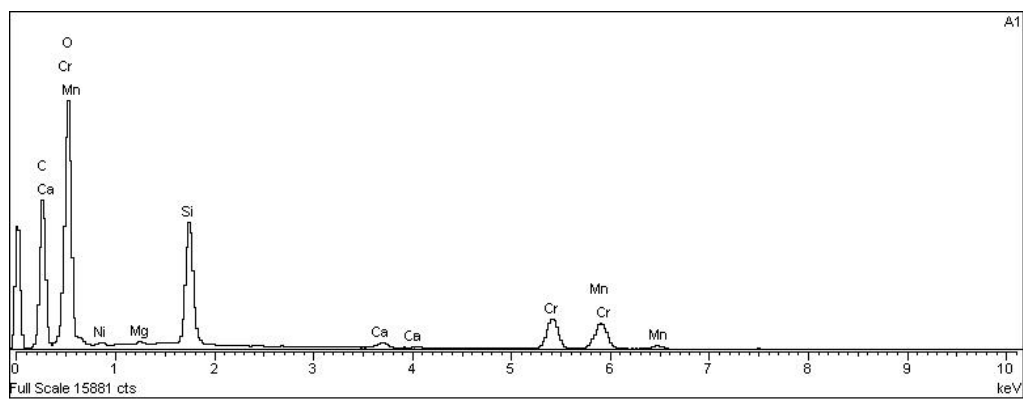
P6



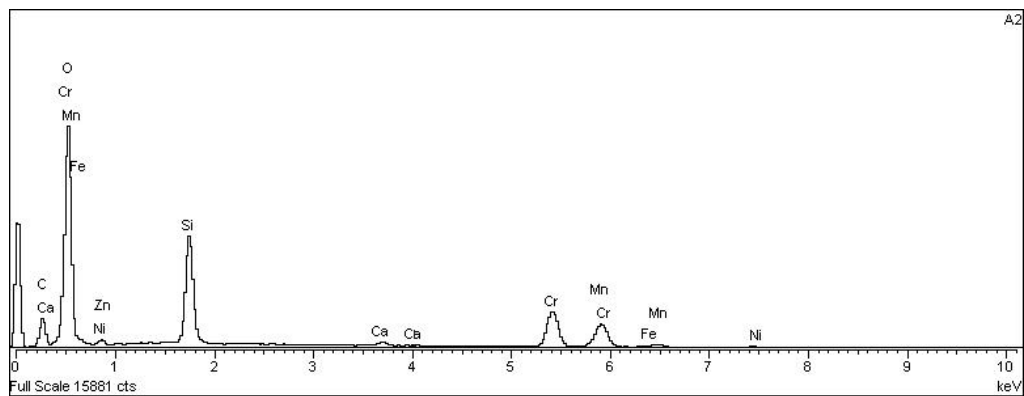
4.1.1 35Cr-45Ni after 100h at 750°C

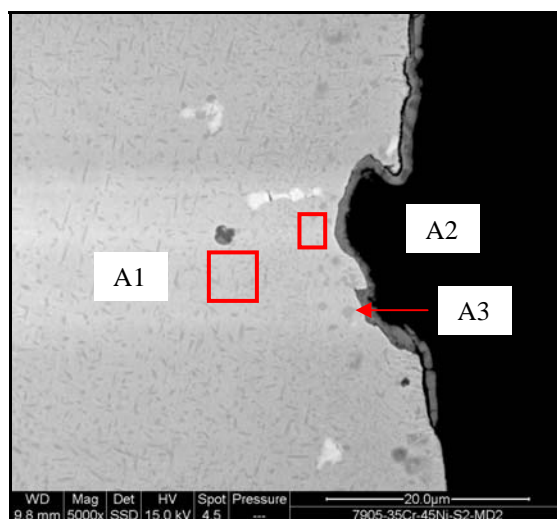


A1

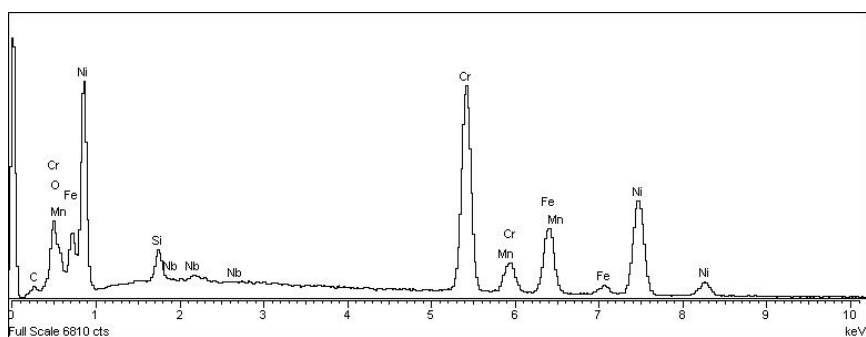


A2

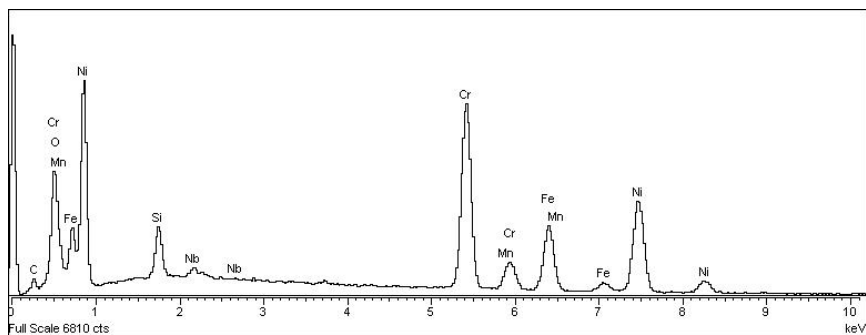




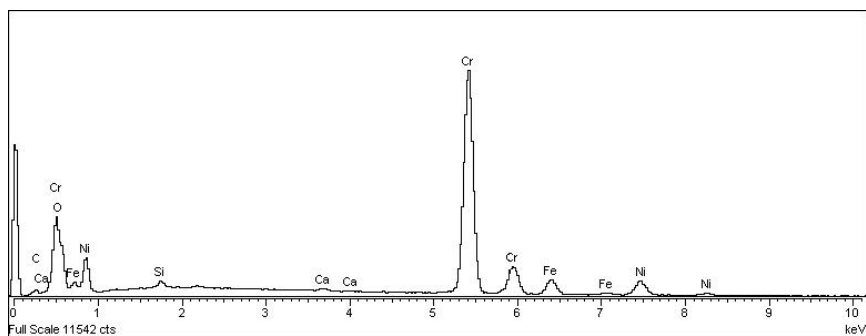
A1

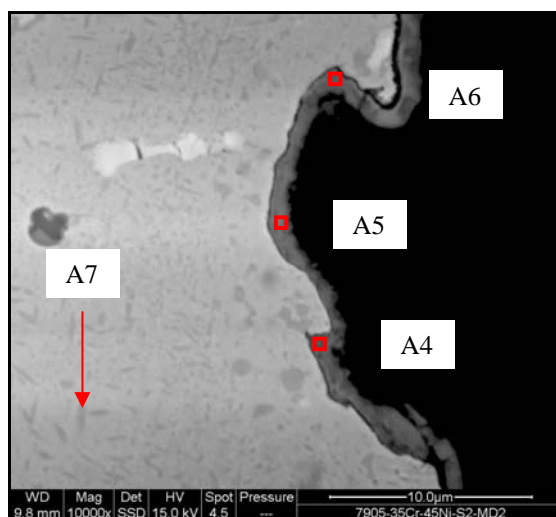


A2

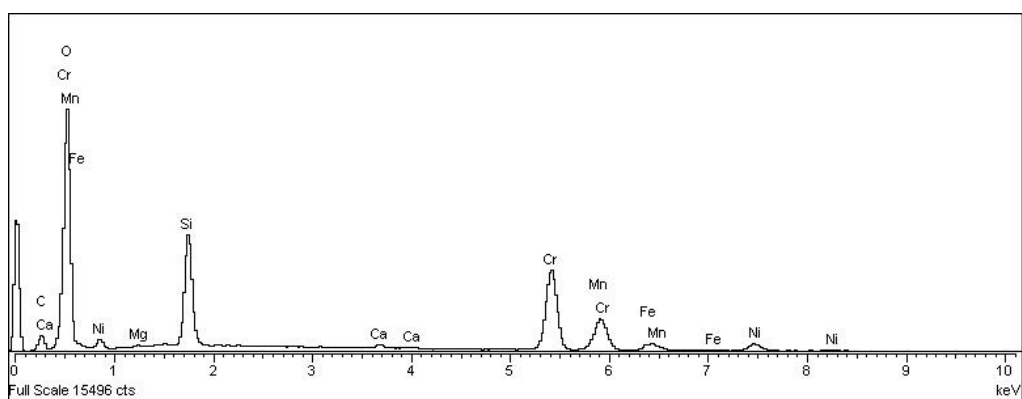


A3

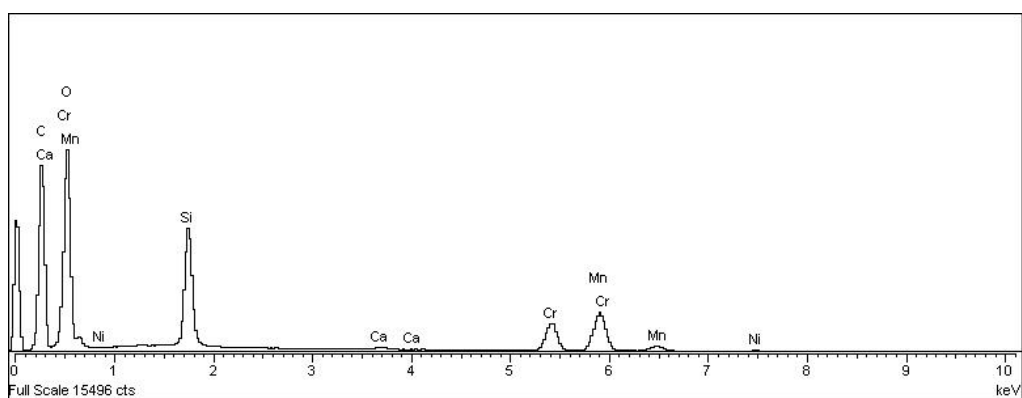




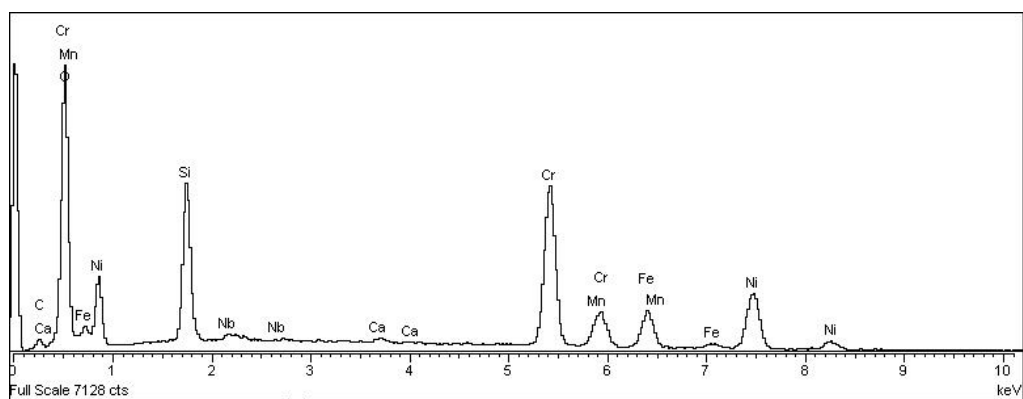
A4



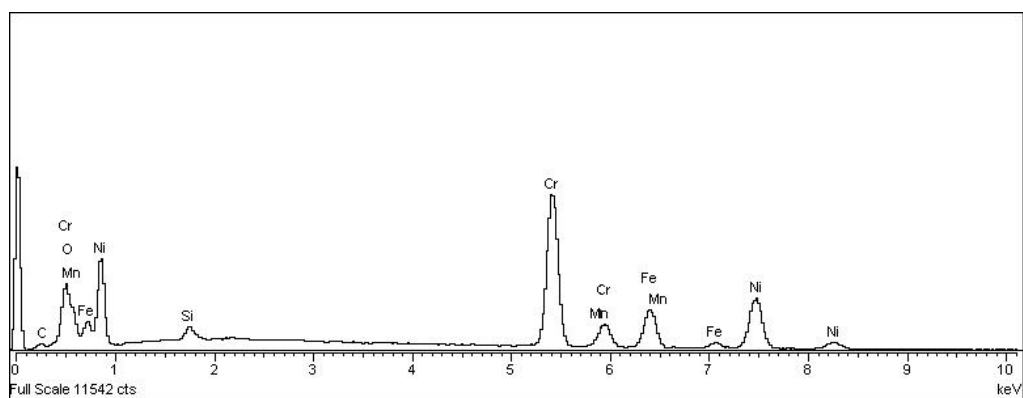
A5



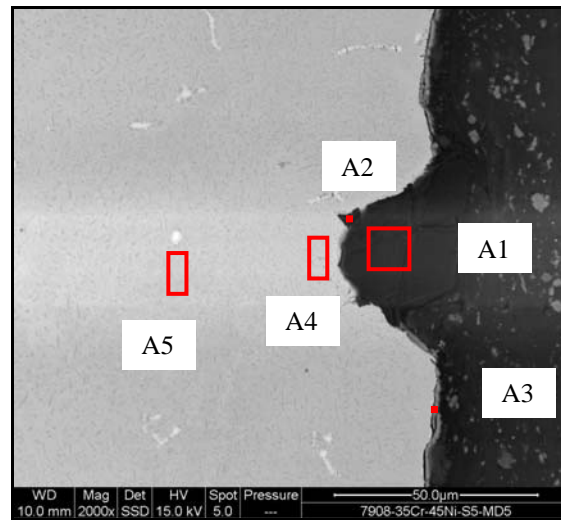
A6



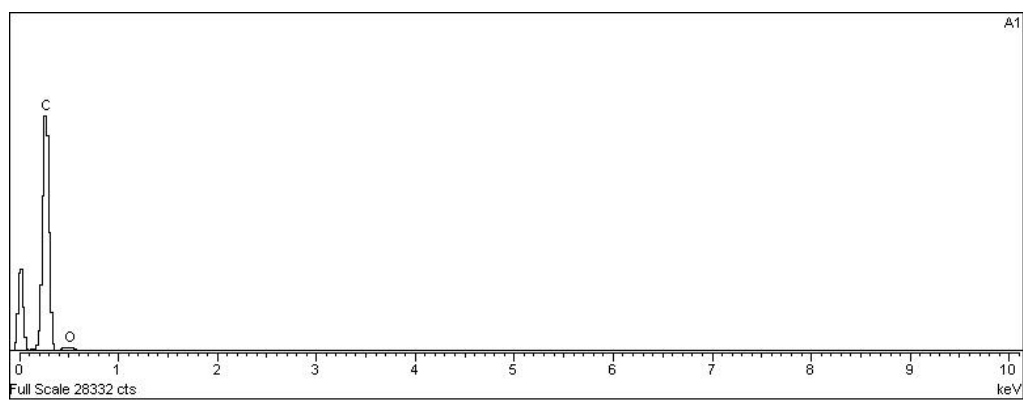
A7



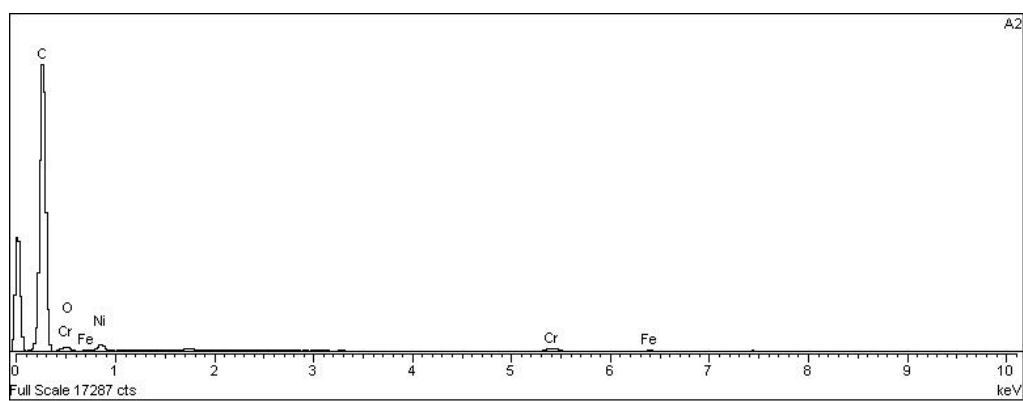
4.1.1 35Cr-45Ni after 500h at 750°C



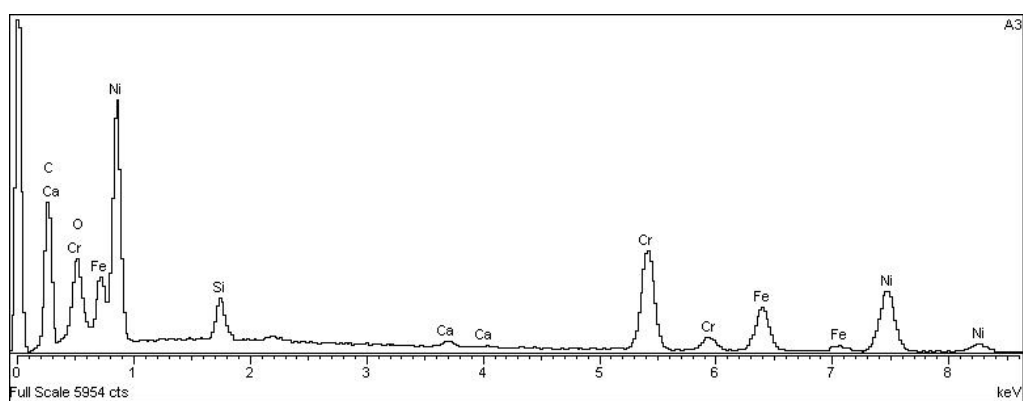
A1



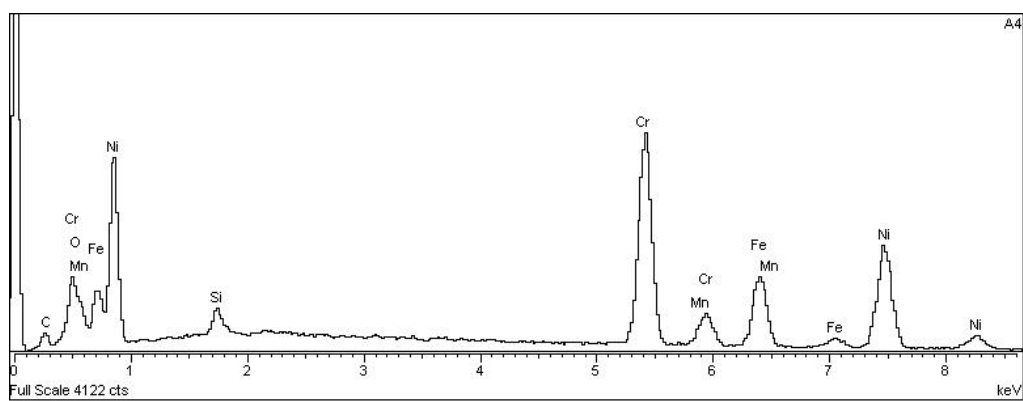
A2



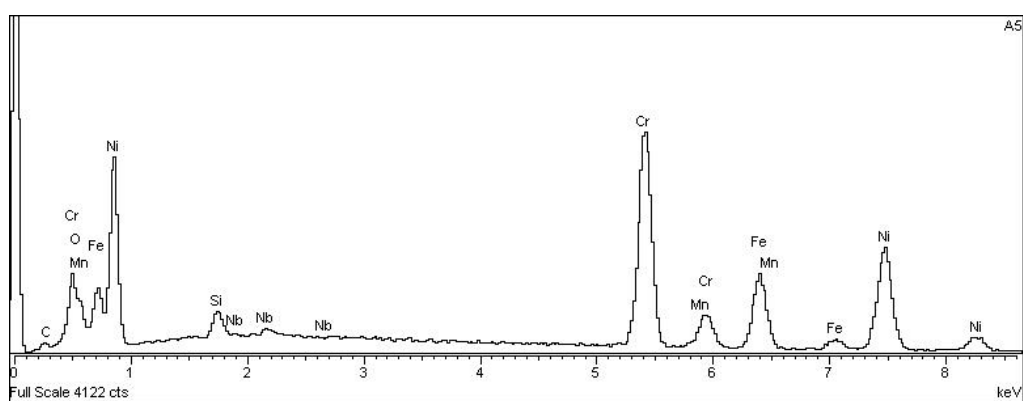
A3



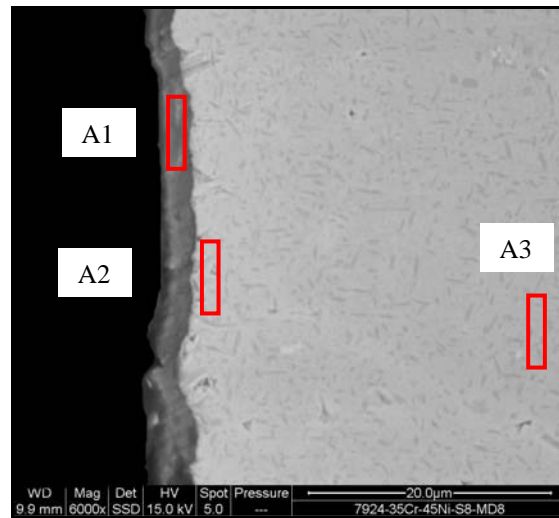
A4



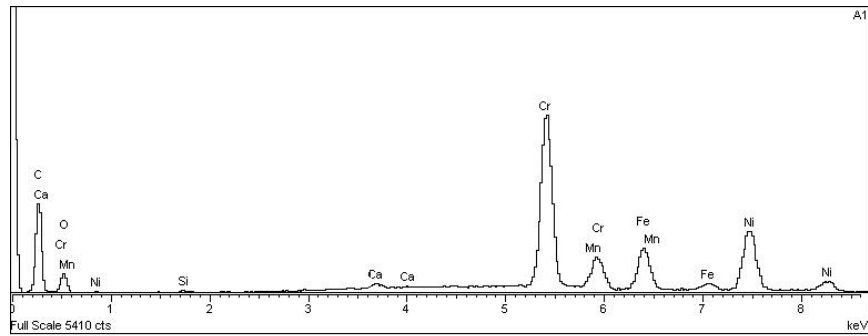
A5



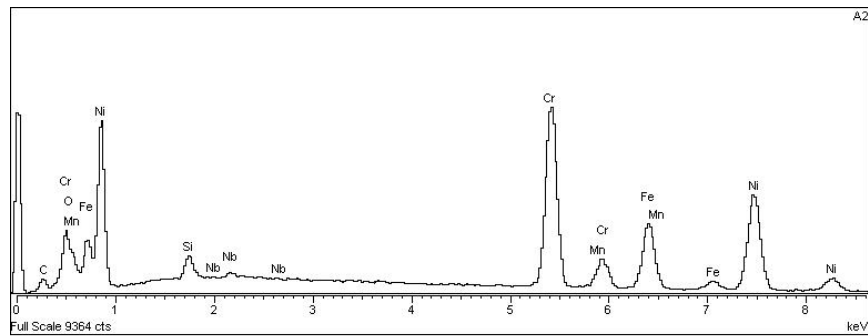
4.1.1 35Cr-45Ni after 1000h at 750°C



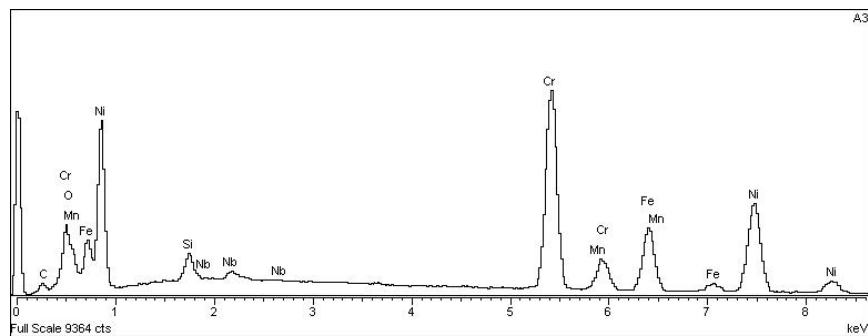
A1



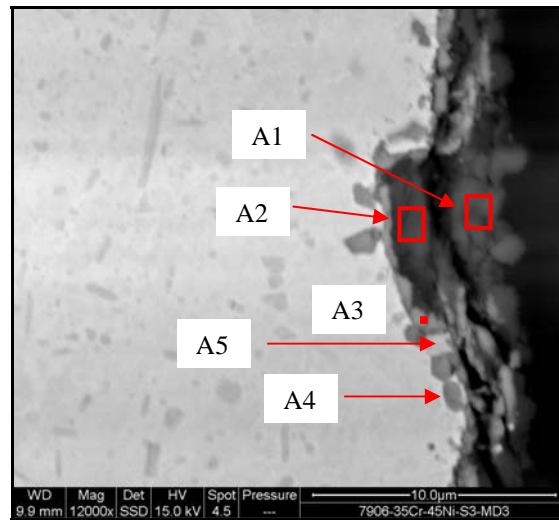
A2



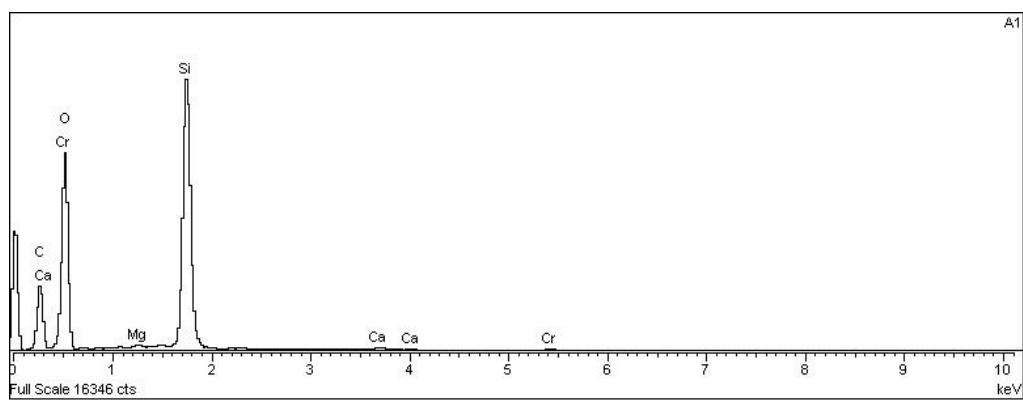
A3



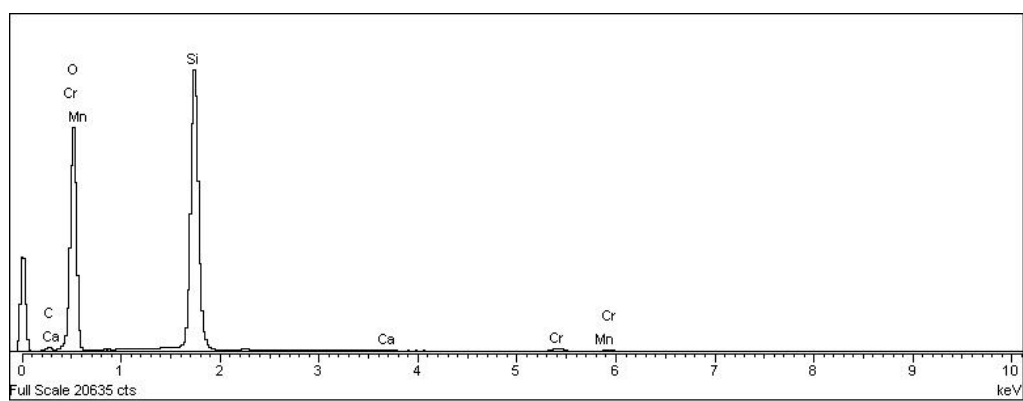
4.1.1 35Cr-45Ni after 100h at 850°C



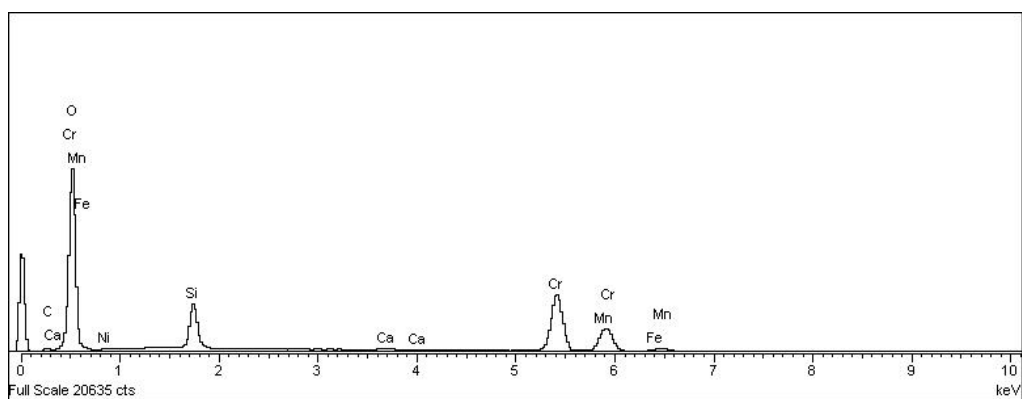
A1



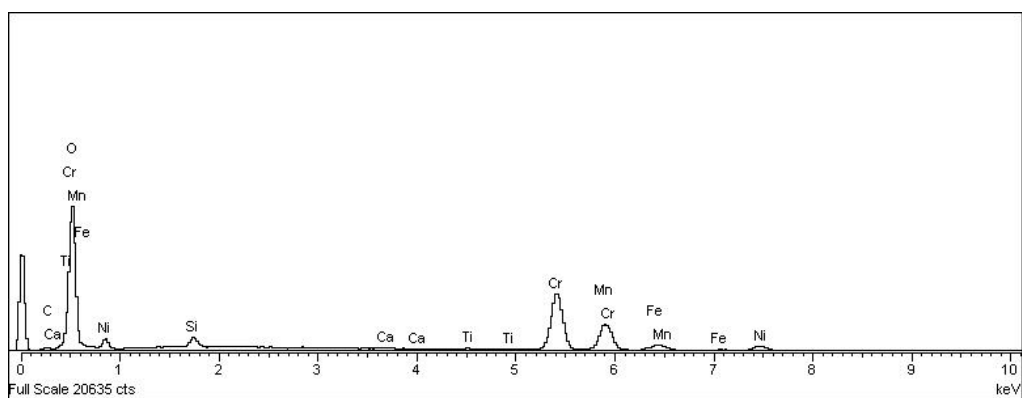
A2



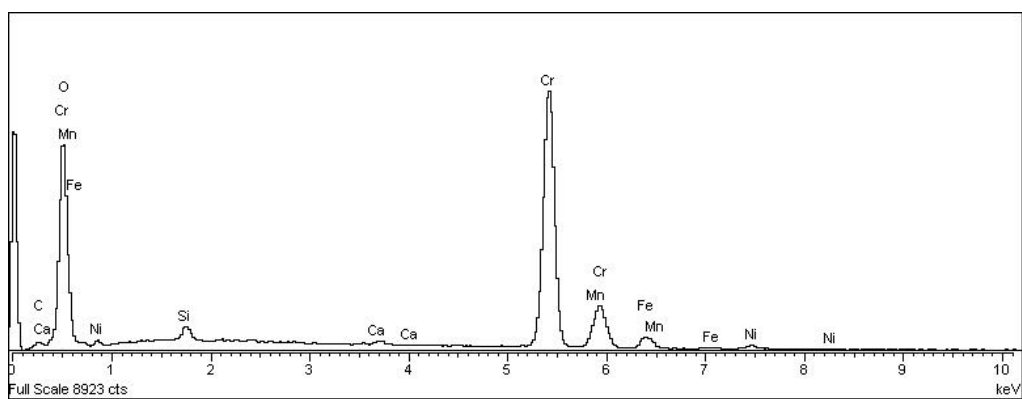
A3

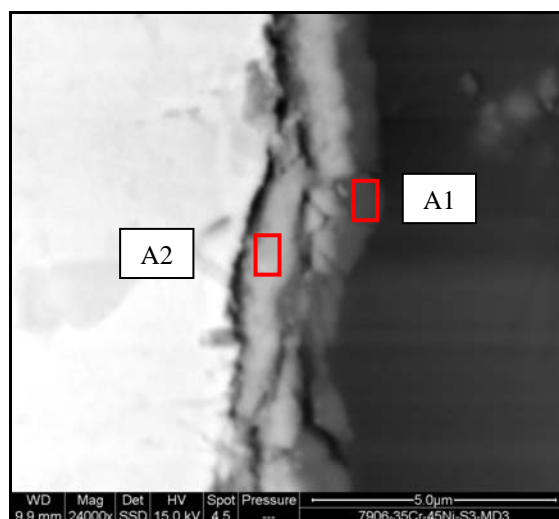


A4

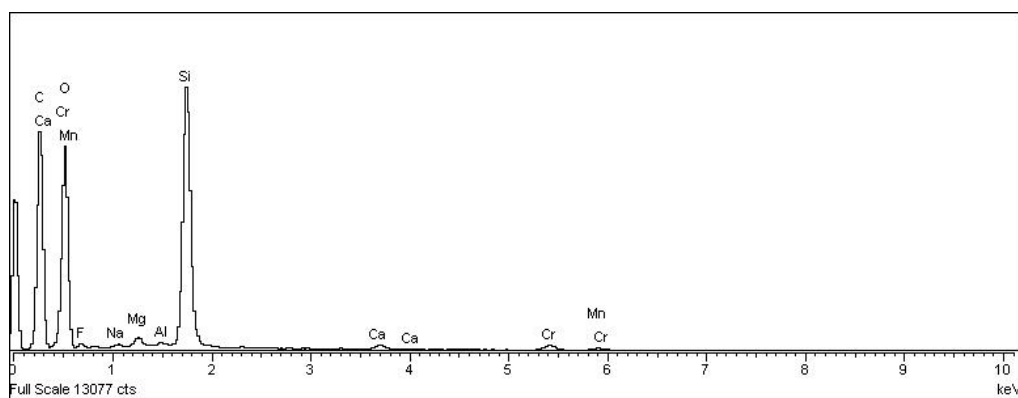


A5

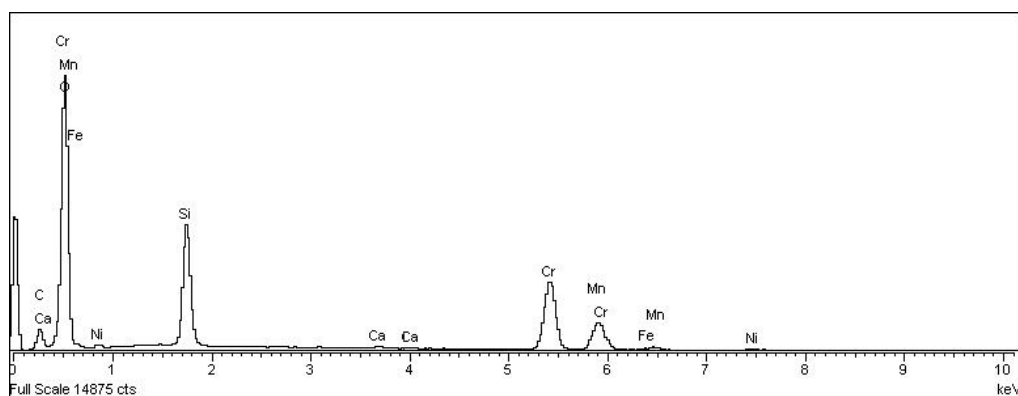




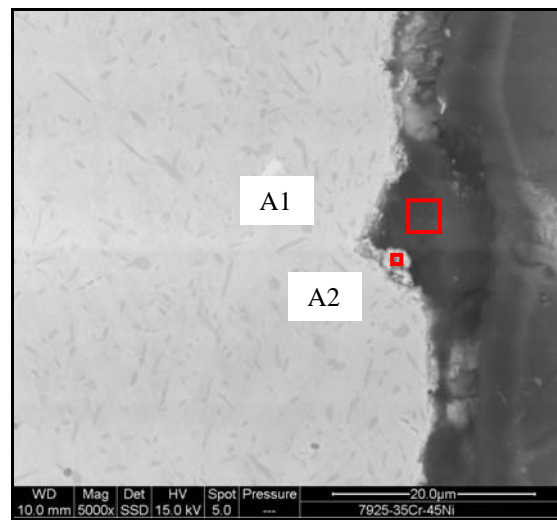
A1



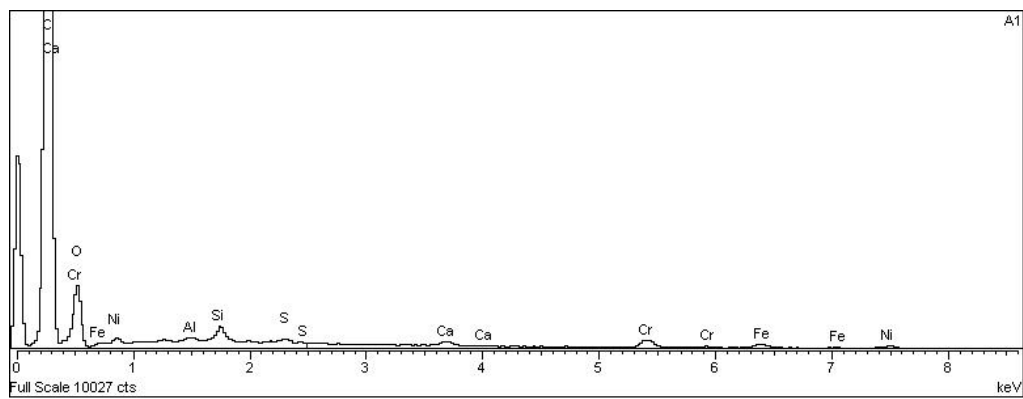
A2



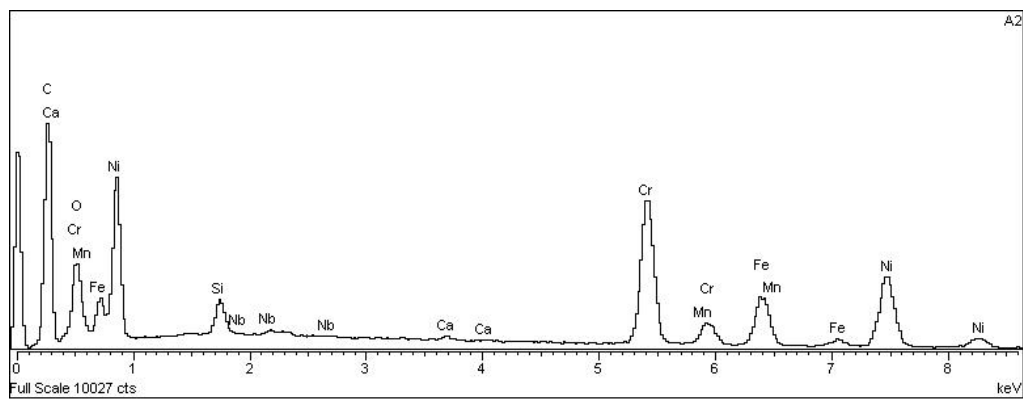
4.1.1 35Cr-45Ni after 500h at 850°C



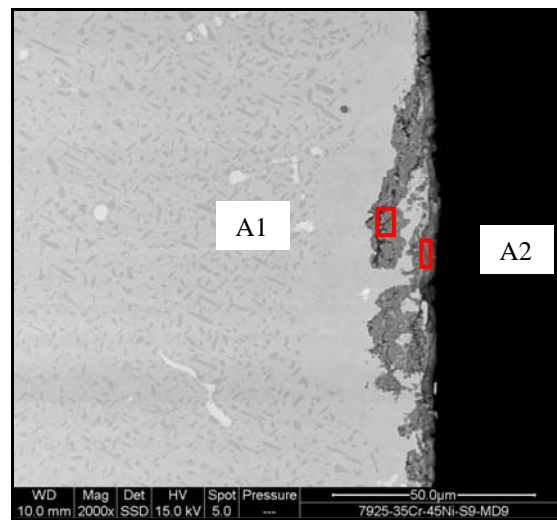
A1



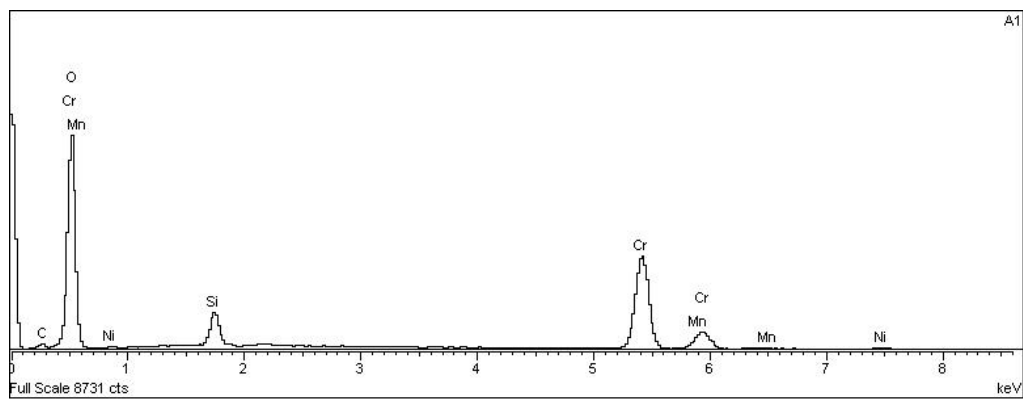
A2



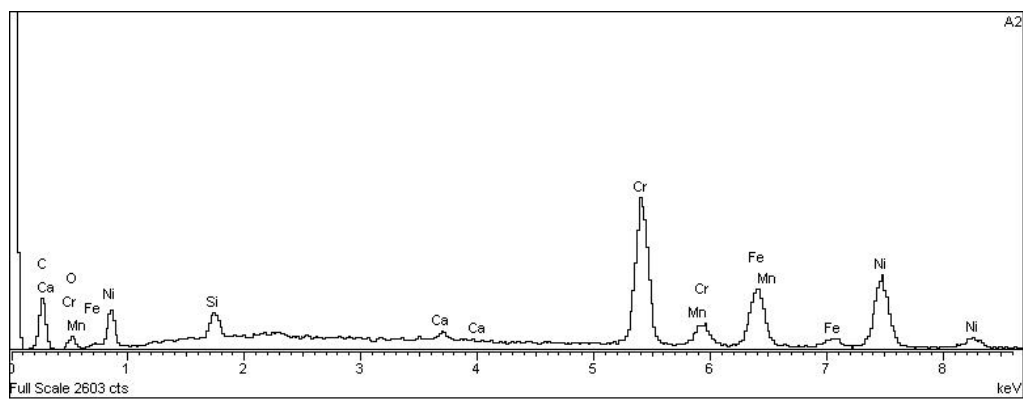
5.5.9 35Cr-45Ni after 500h at 850°C



A1



A2



6 Alloy UCX

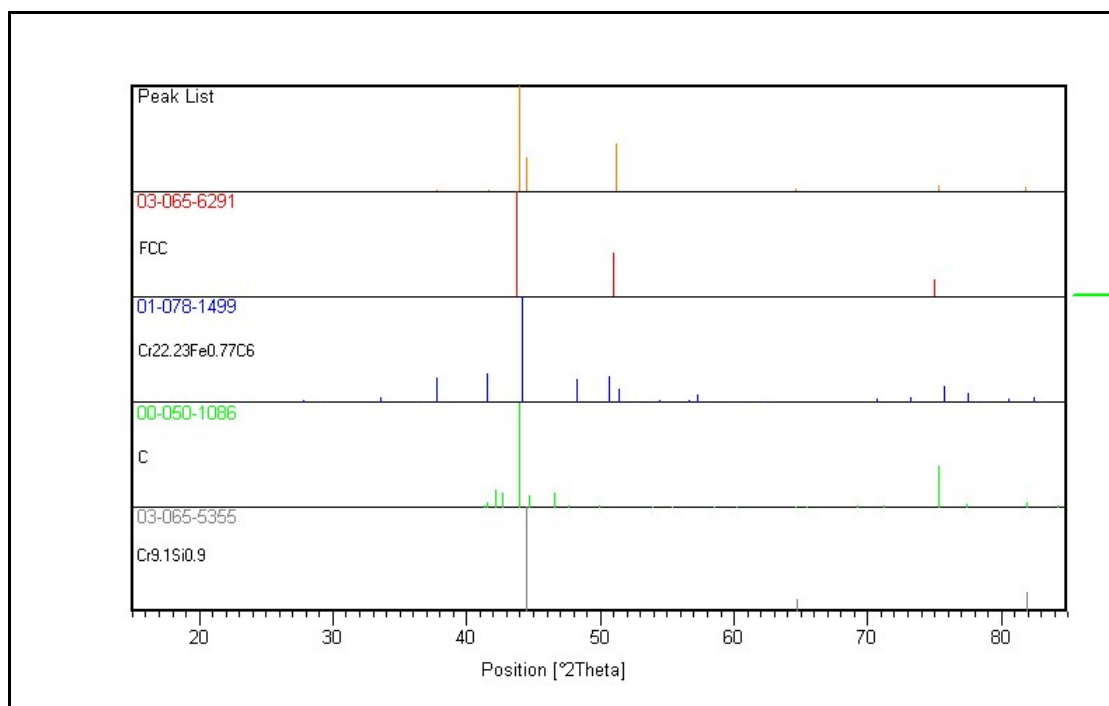
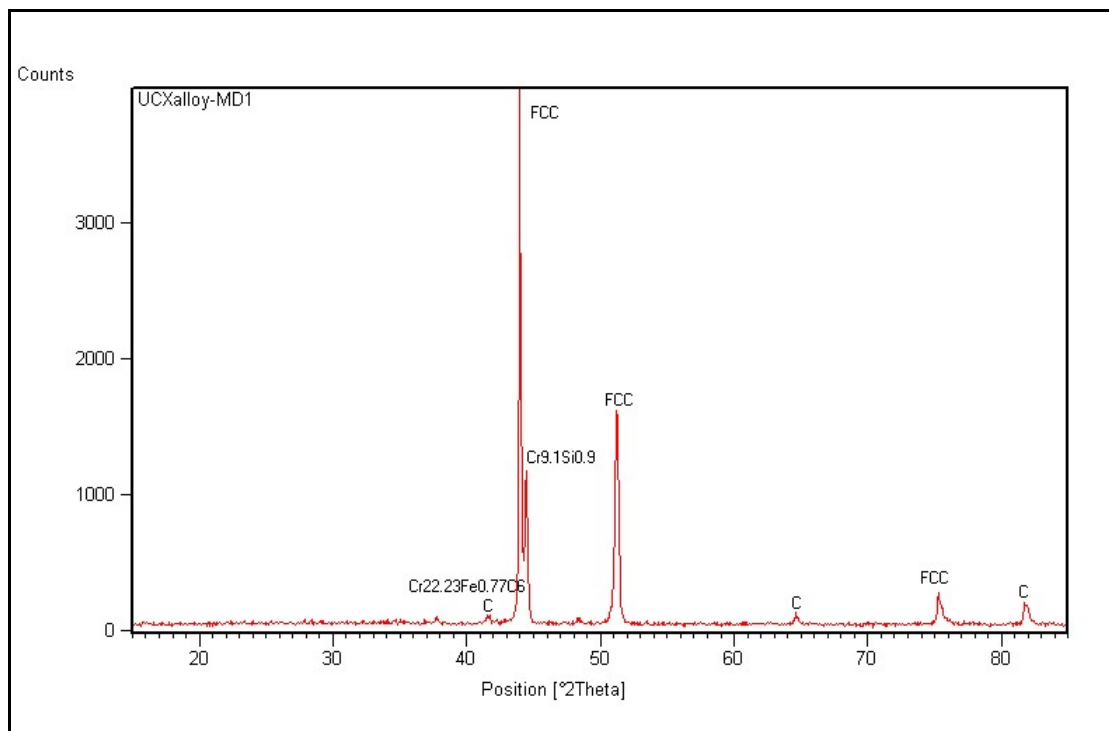
6.1 Weight Change Measurements

Table 6.1 Weight change (mg/cm^2) of the alloy after the exposure at different temperatures for different periods of time.

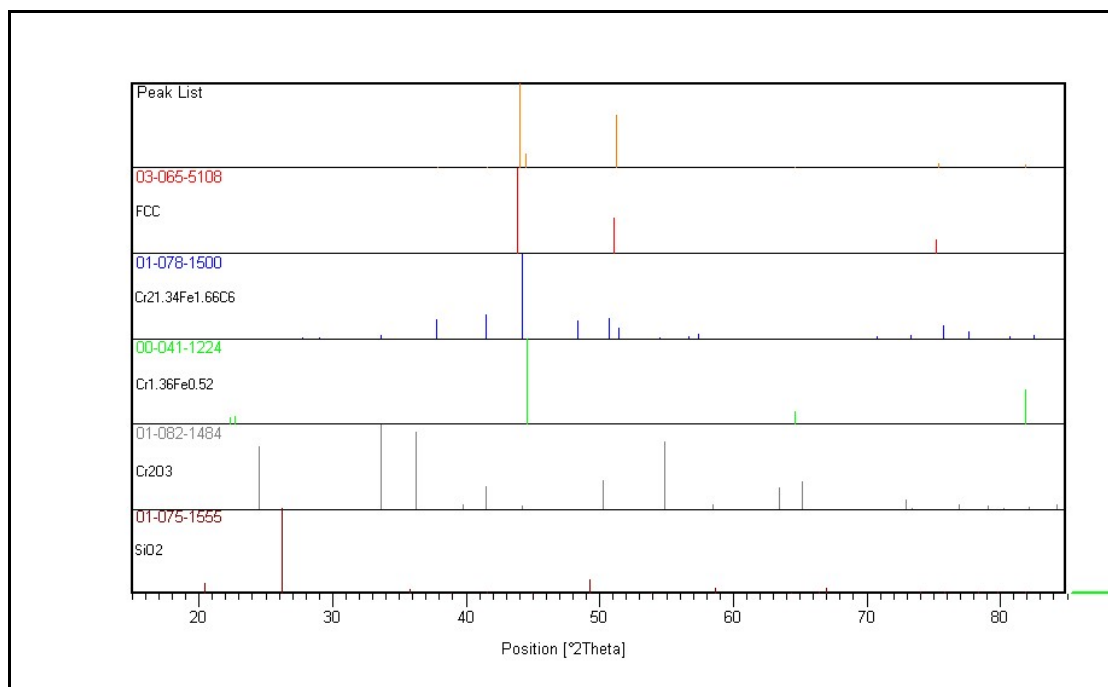
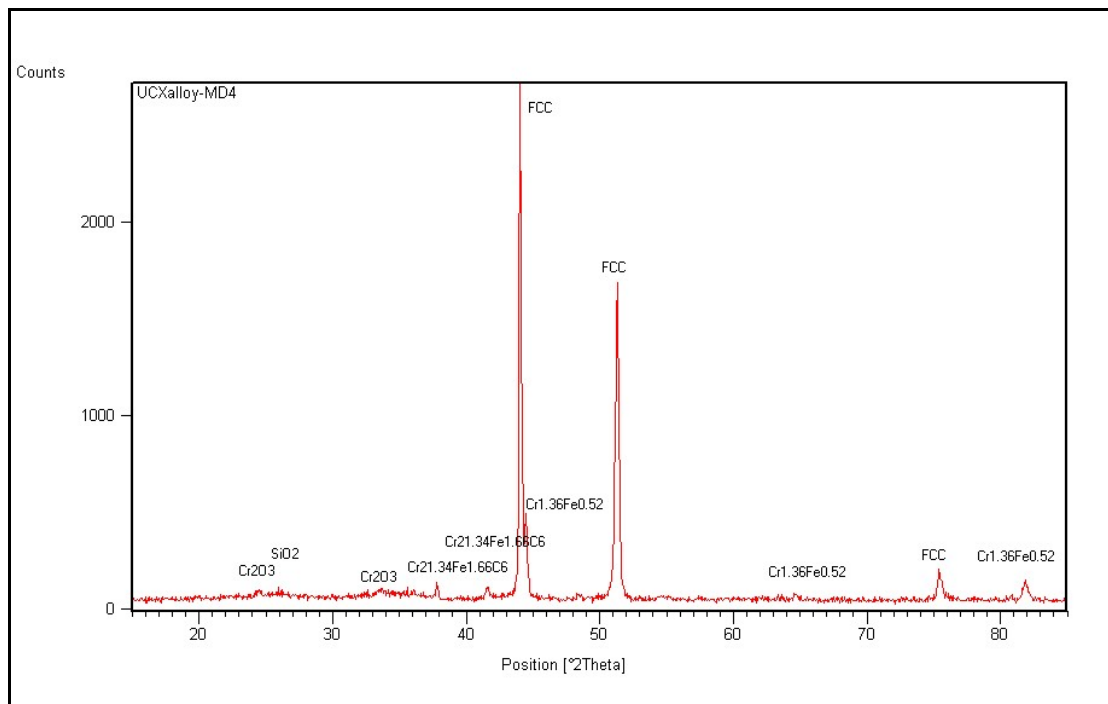
Time, h	T, °C	W_{before} , g	W_{after} , g	A, cm^2	$\Delta W/A$, mg/cm^2
100	650	15.3172	15.3193	12.3804	0.1696
500	650	15.2910	15.2973	12.4222	0.5072
1000	650	15.7506	15.7562	12.4208	0.4541
100	750	15.9727	15.9782	12.6207	0.4358
500	750	14.9900	15.0062	12.2311	1.3245
1000	750	15.8989	15.9053	12.5391	0.5104
100	850	15.1684	15.1717	12.3270	0.2677
500	850	15.6837	15.6885	12.4420	0.3818
1000	850	15.5127	15.5025	12.3982	-0.8227

6.2 X ray Diffraction Results

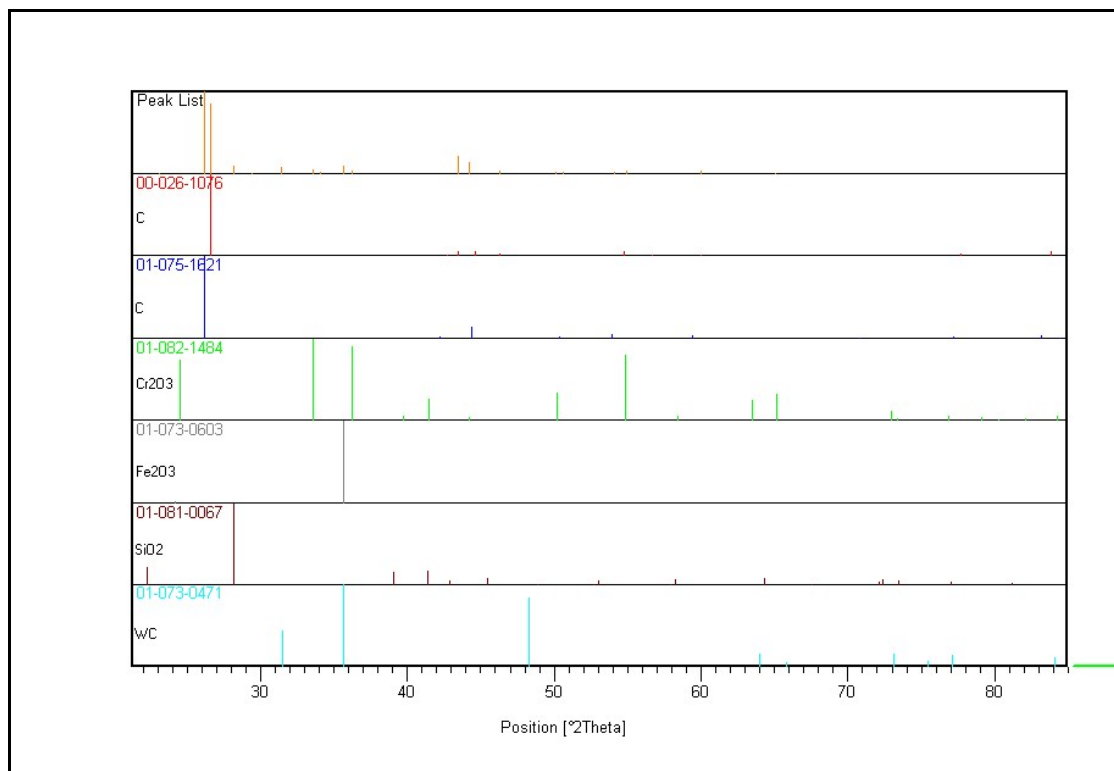
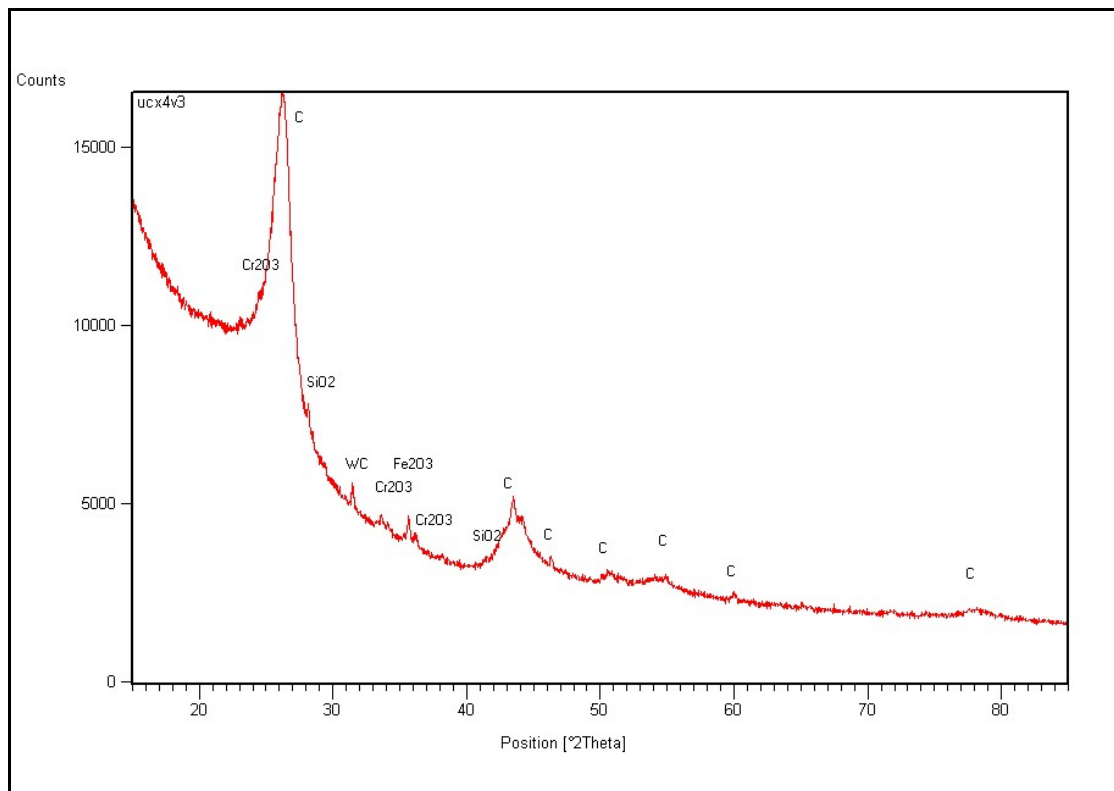
6.2.1 UCX after 100h at 650°C



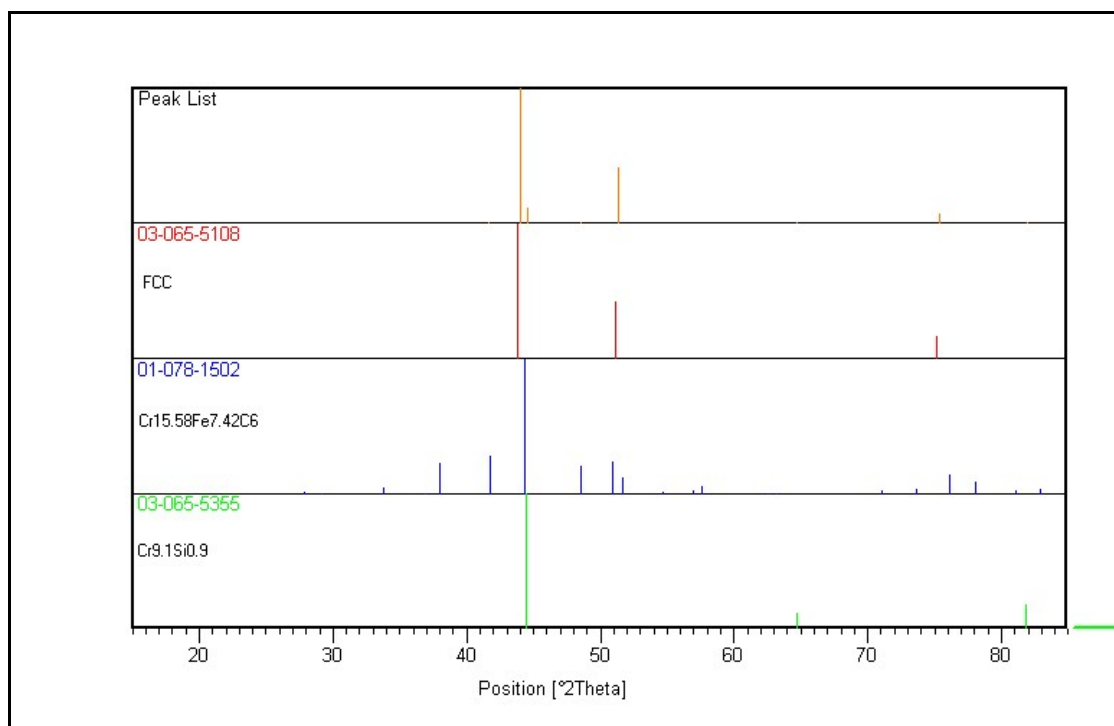
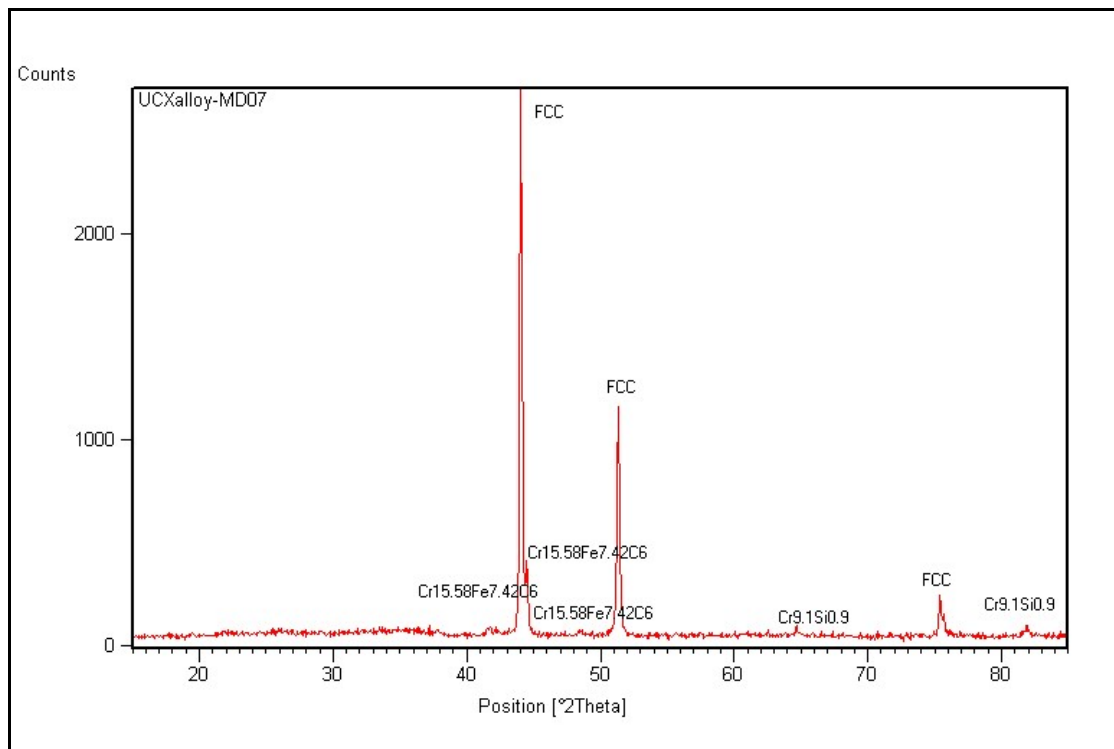
6.2.2 UCX after 500h at 650°C



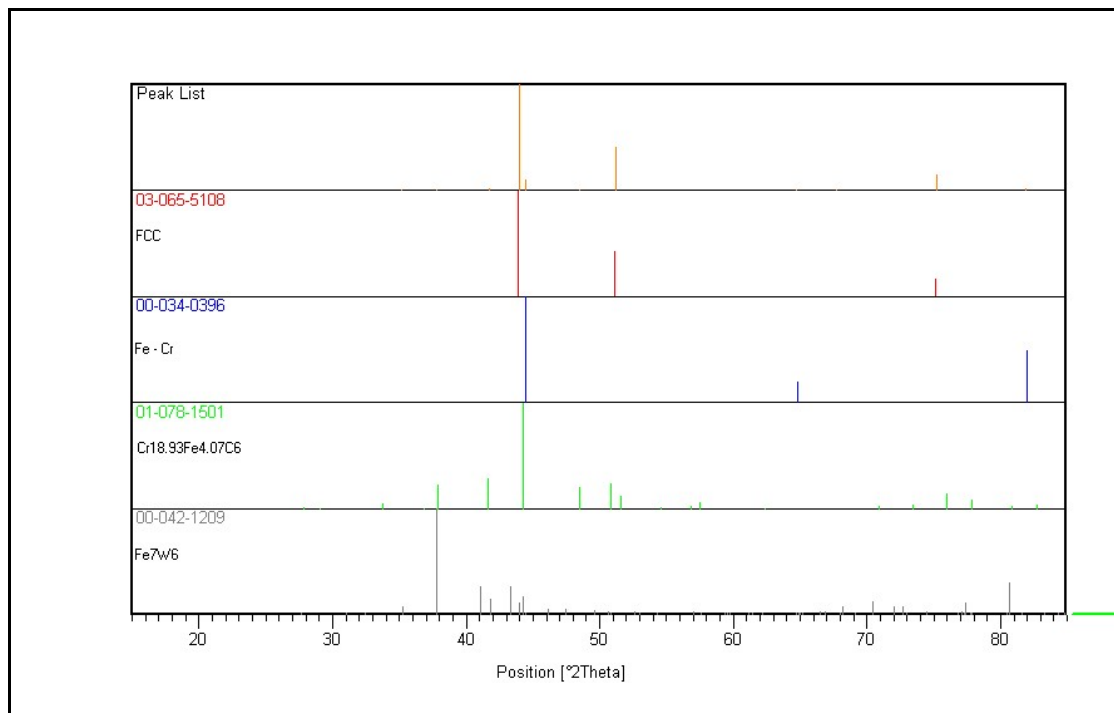
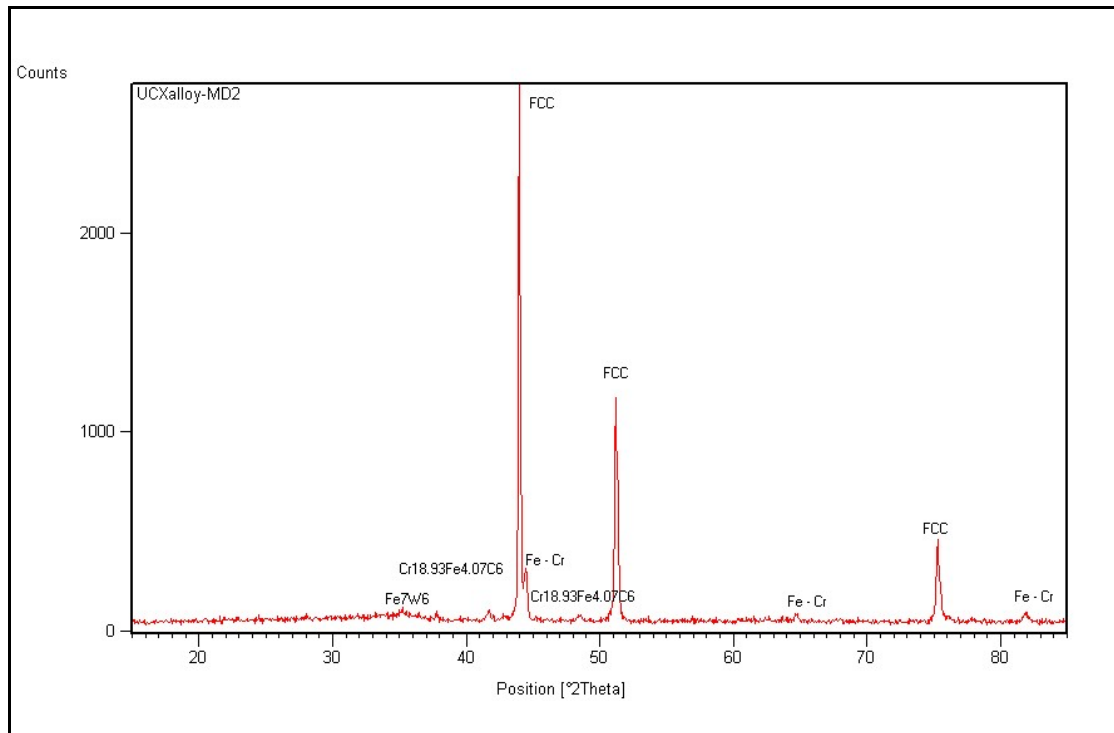
6.2.3 Deposit removed from UCX after 500h at 650°C



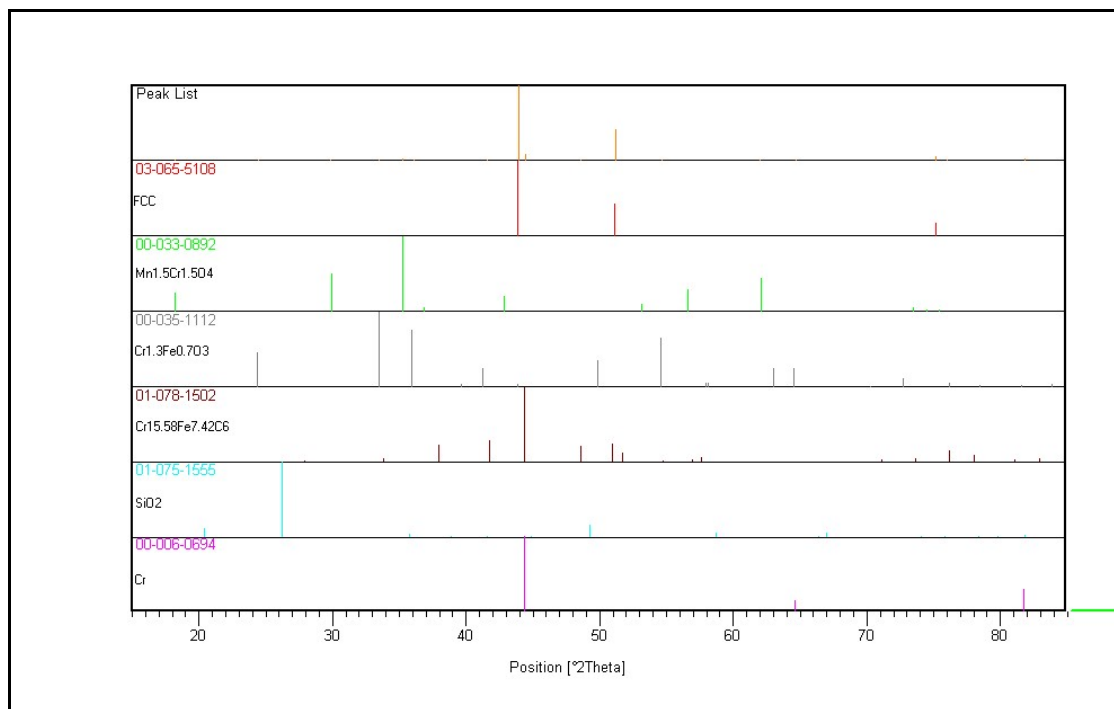
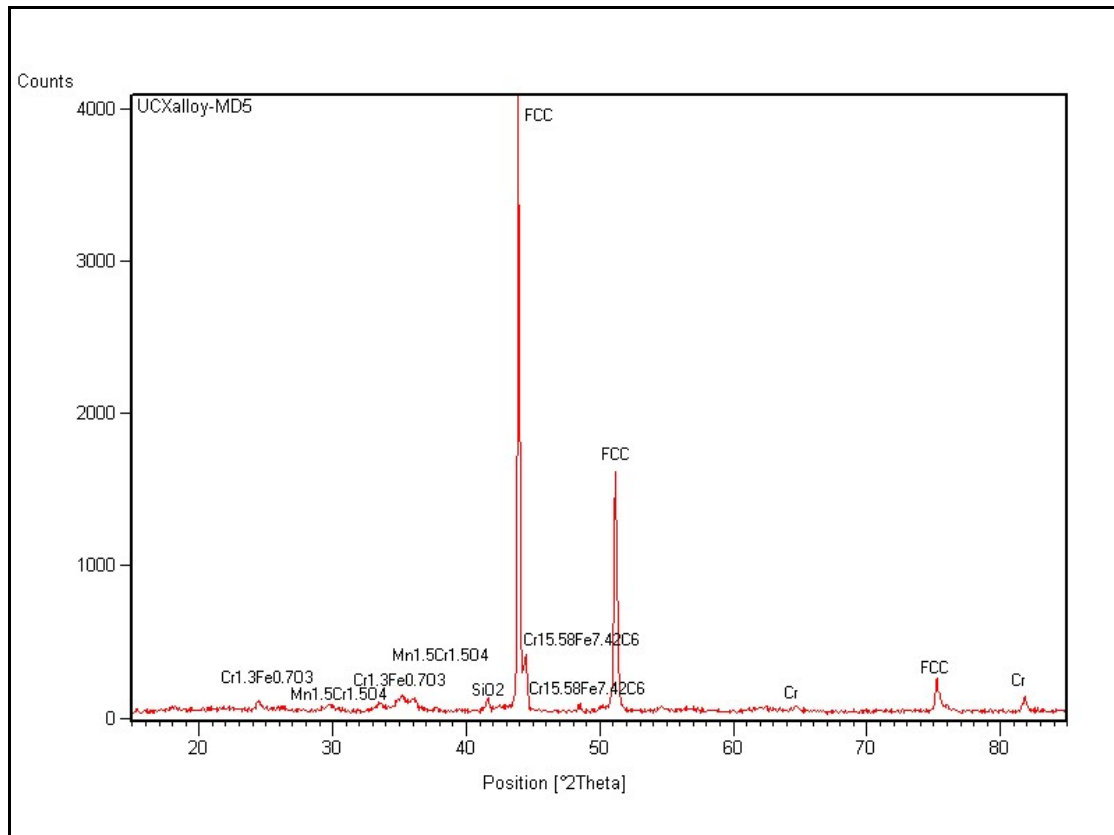
6.2.4 UCX after 1000h at 650°C



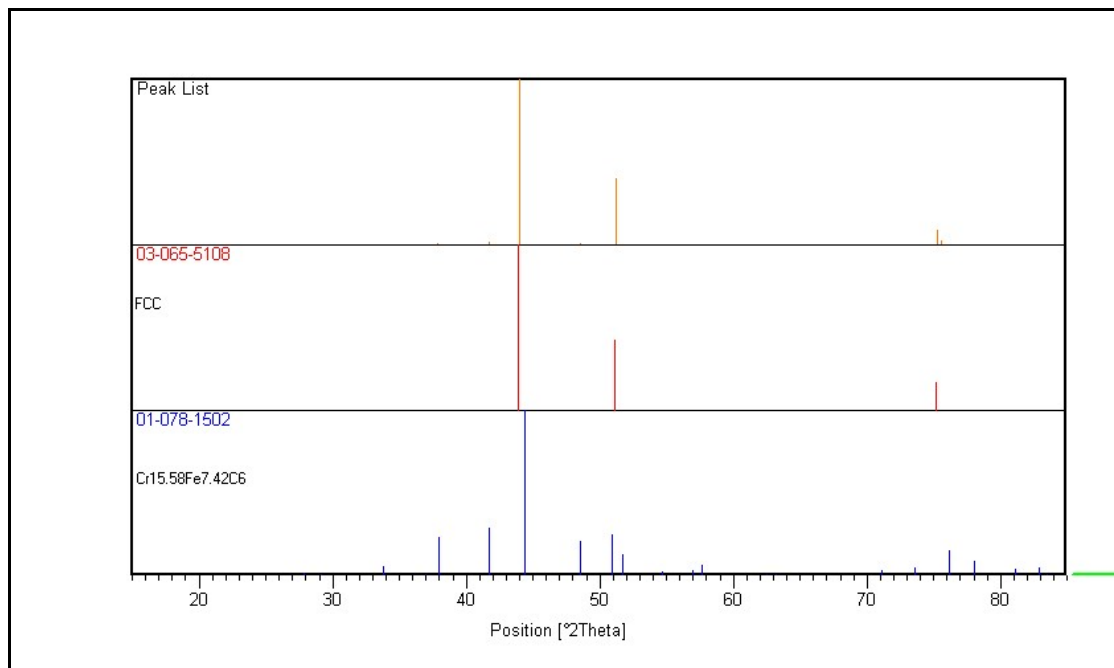
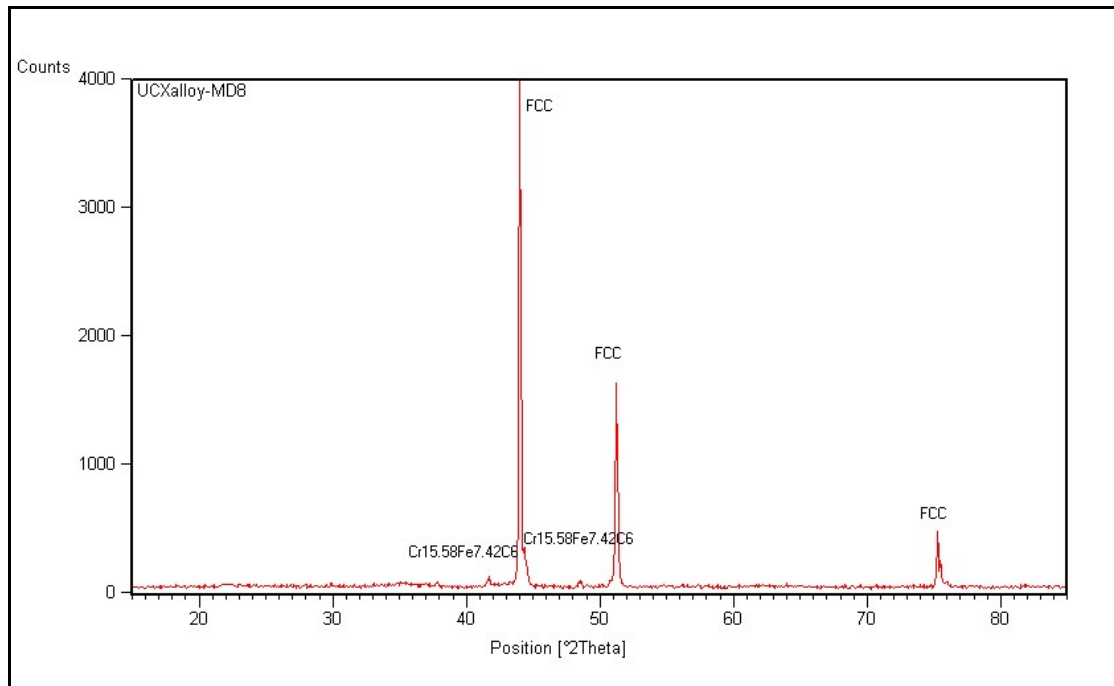
6.2.5 UCX after 100h at 750°C



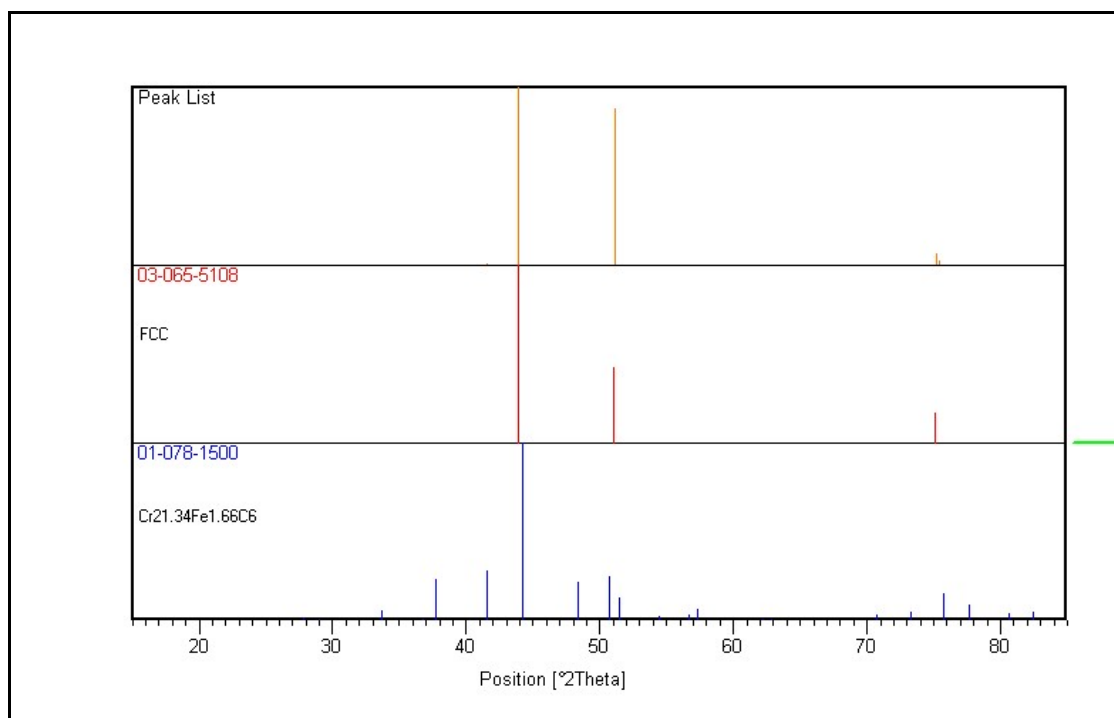
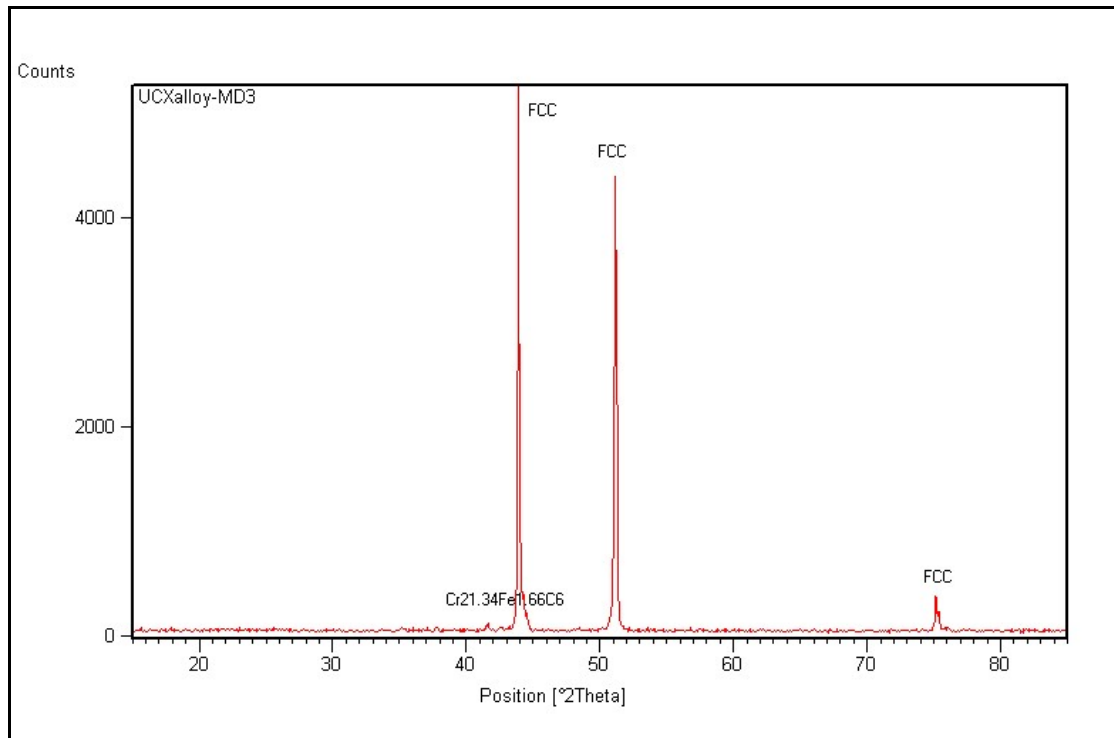
6.2.6 UCX after 500h at 750°C



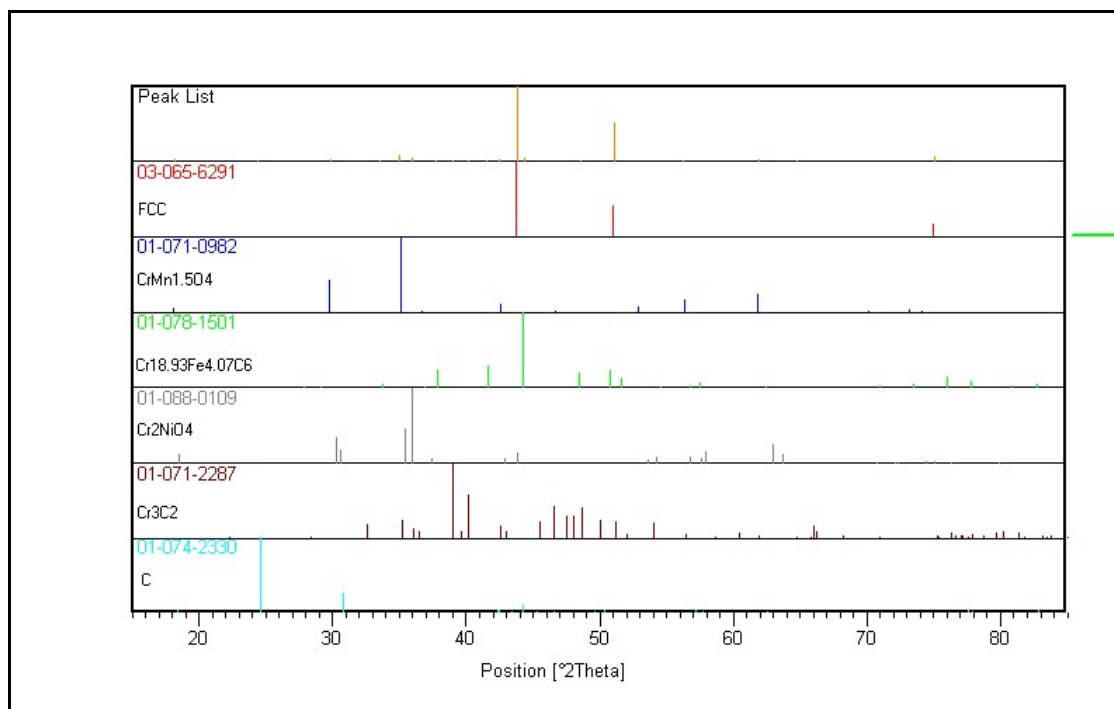
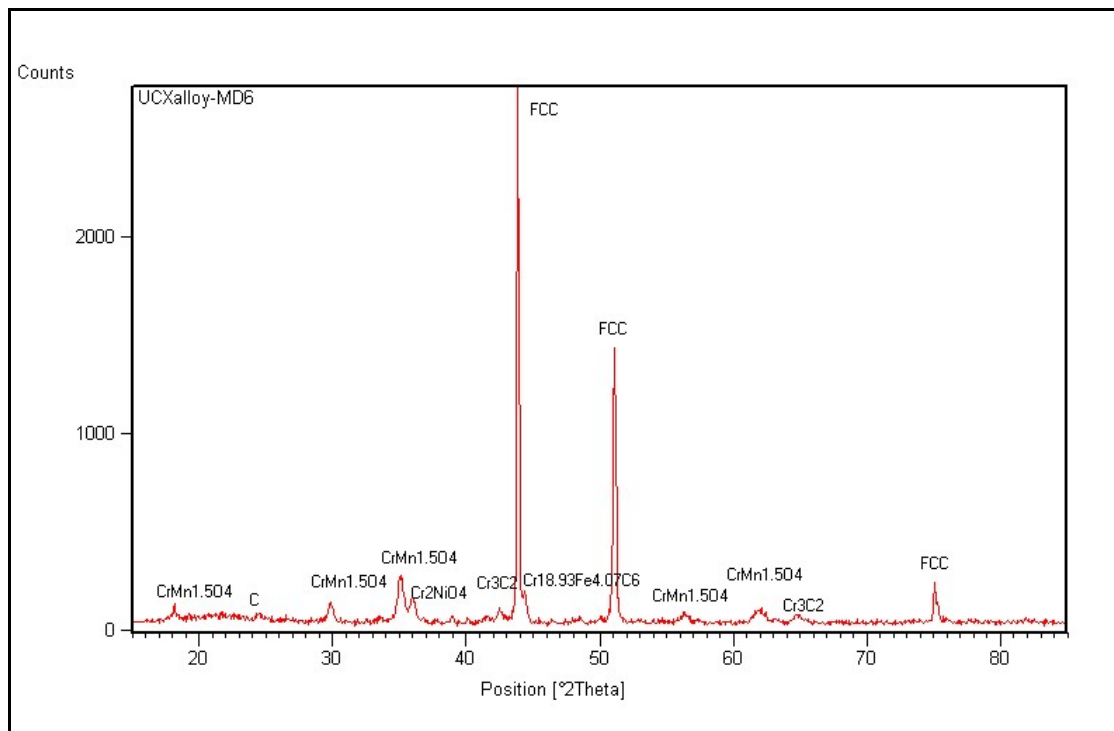
6.2.7 UCX after 1000h at 750°C



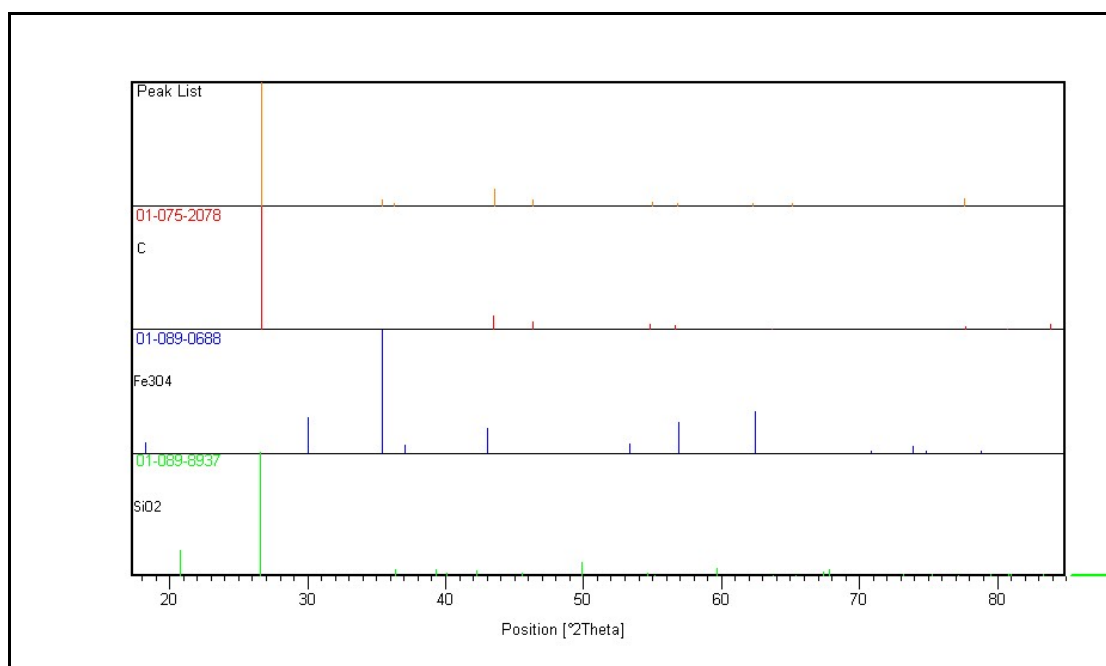
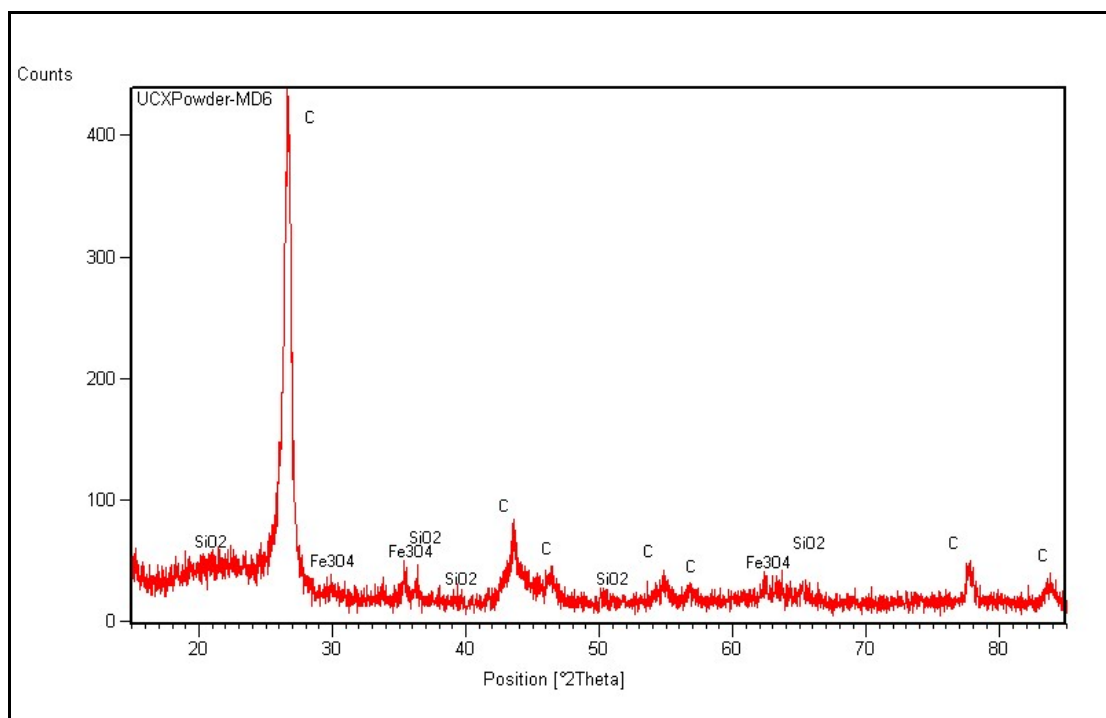
6.2.8 UCX after 100h at 850°C



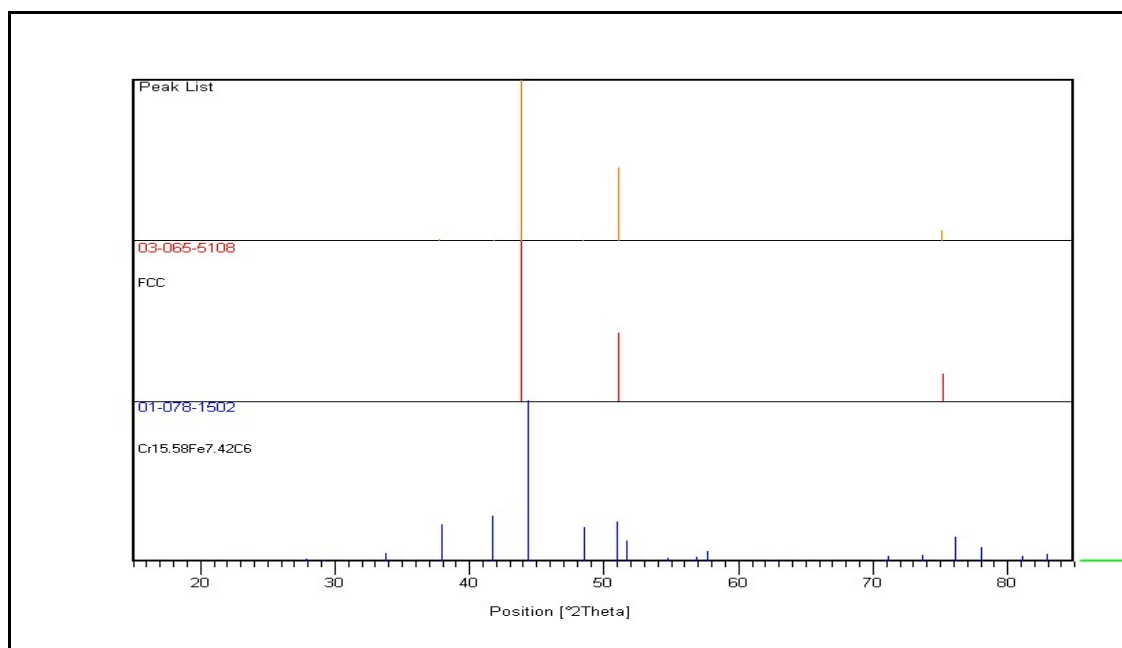
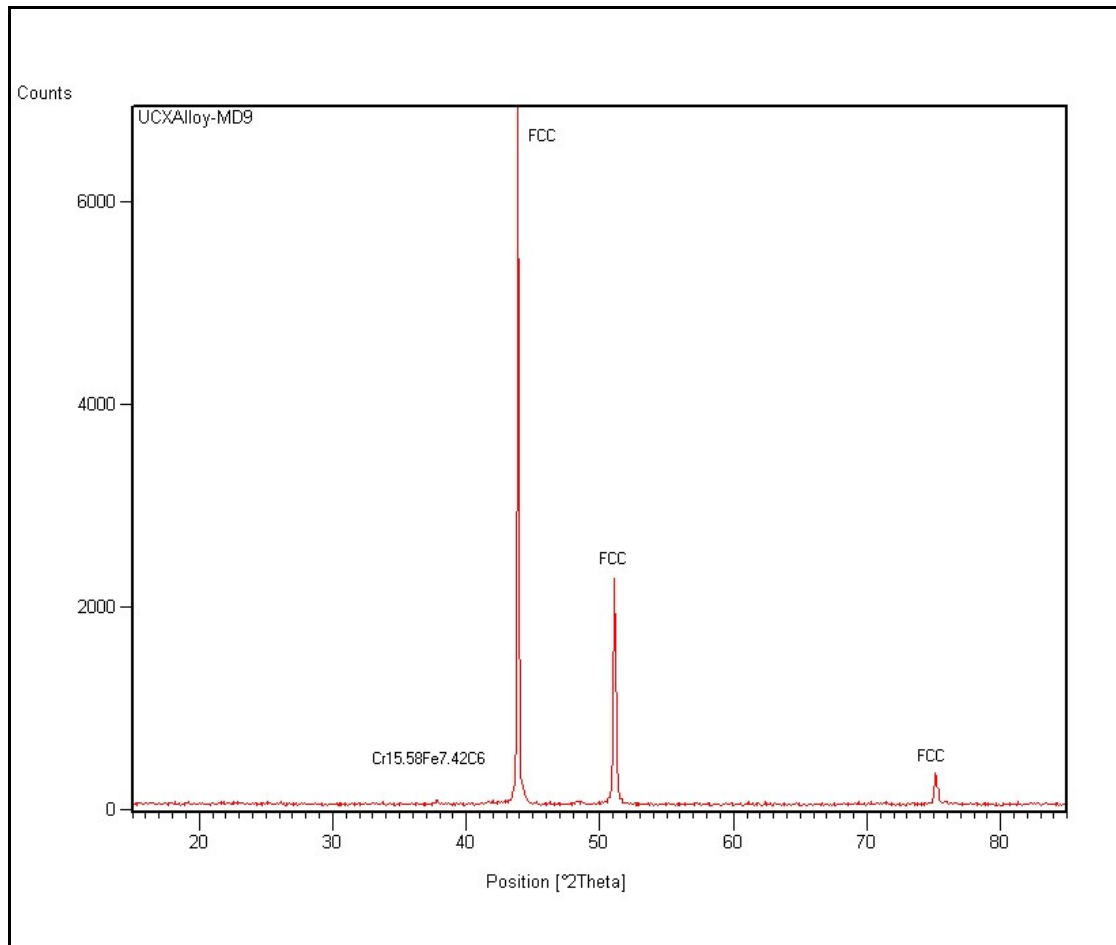
6.2.9 UCX after 500h at 850°C



6.2.10 Deposit removed from UCX after 500h at 850°C

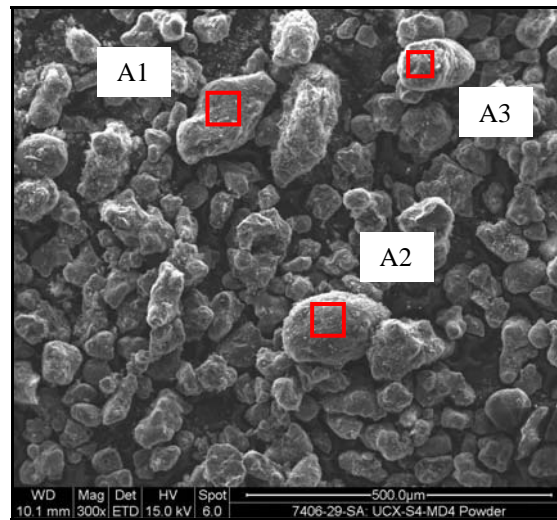


6.2.11 UCX after 1000h at 850°C

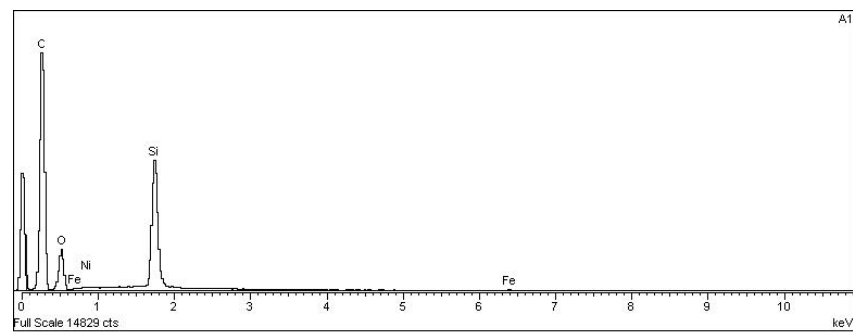


6.3 SEM/EDX Deposits Analysis

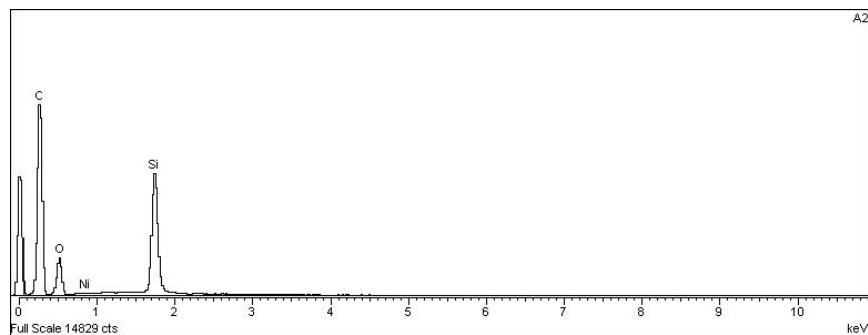
6.3.1 Deposit collected from UCX after 500h at 650°C



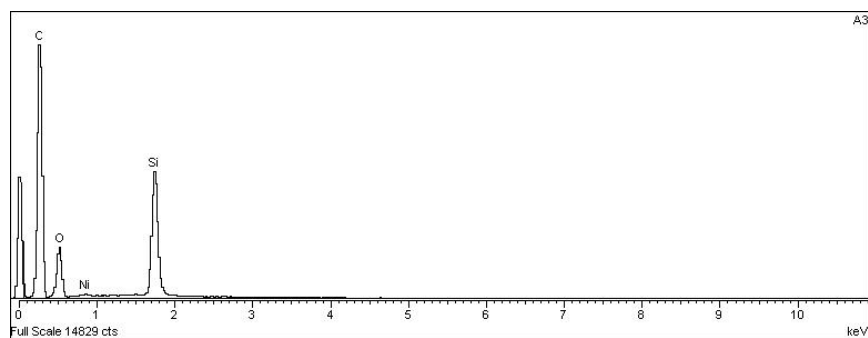
A1



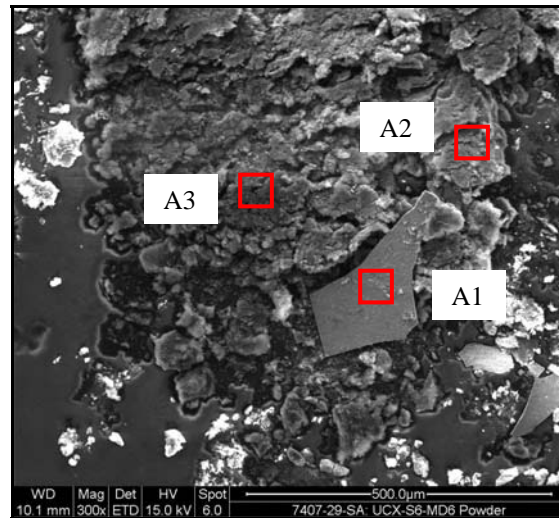
A2



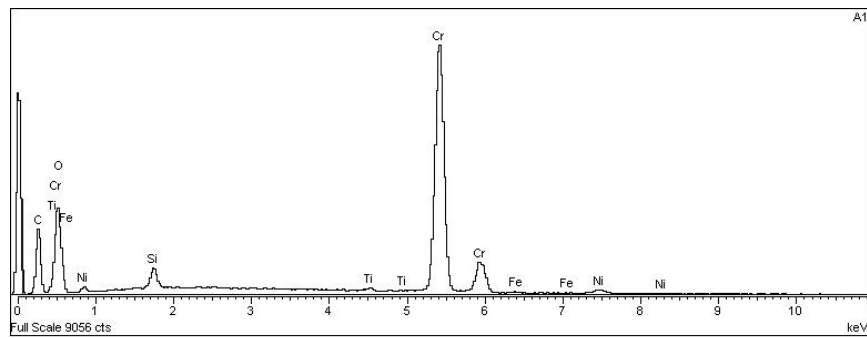
A3



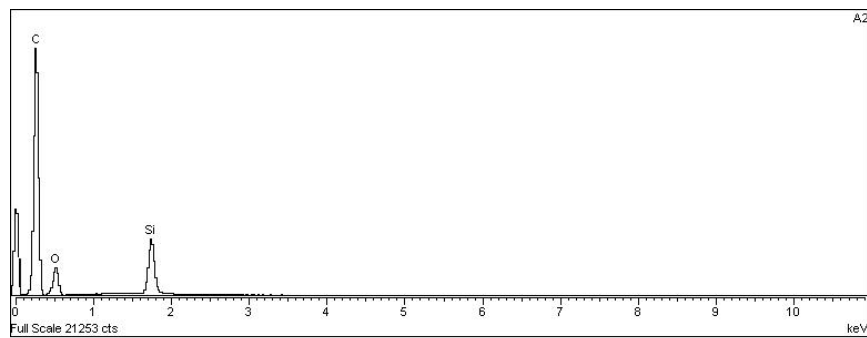
6.3.2 Deposit collected from UCX after 500h at 850°C



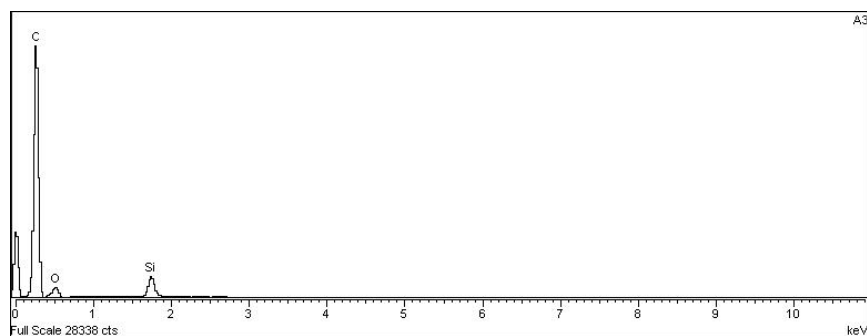
A1



A2

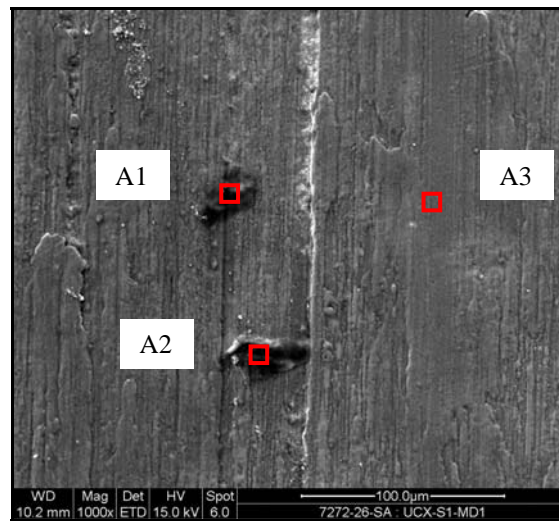


A3

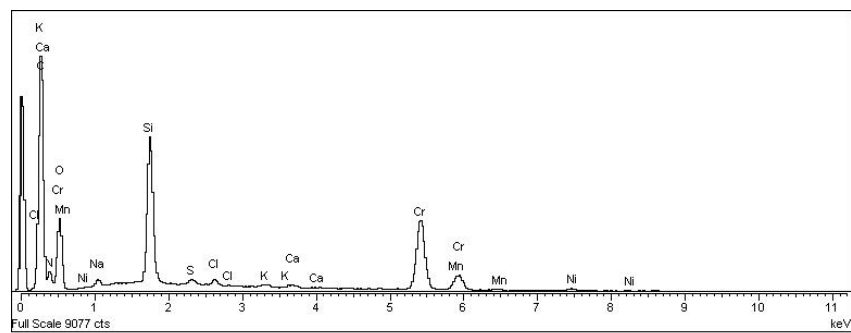


6.4 Surface Analyses

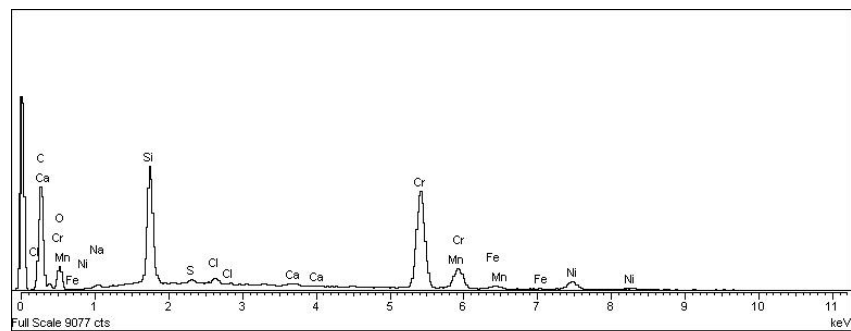
6.4.1 UCX after 100h at 650°C



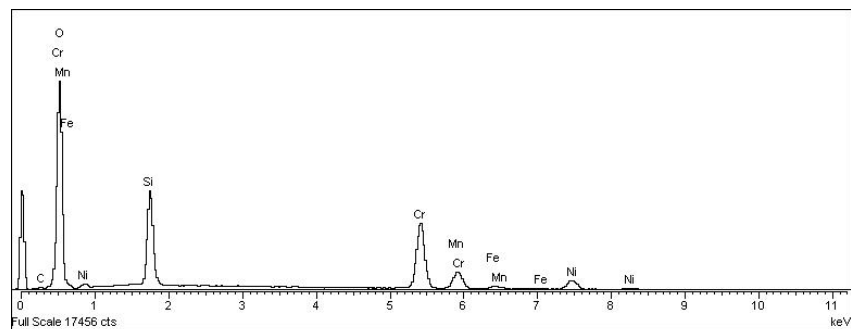
A1

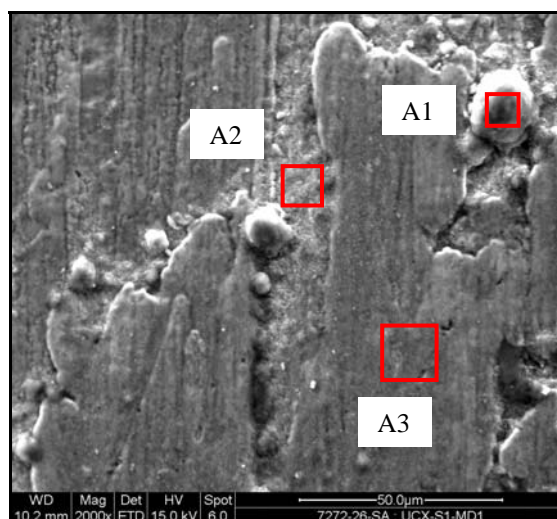


A2

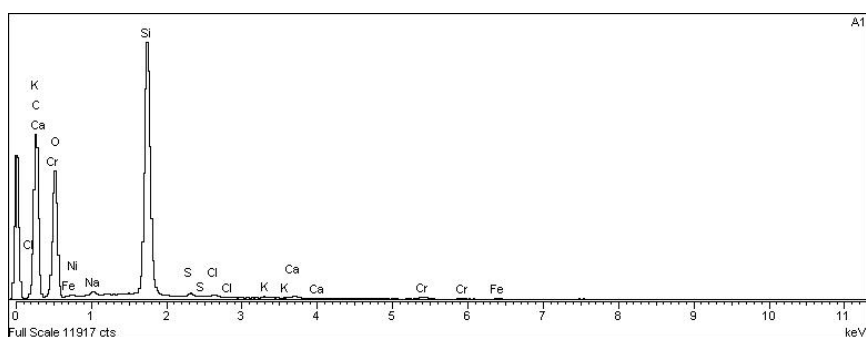


A3

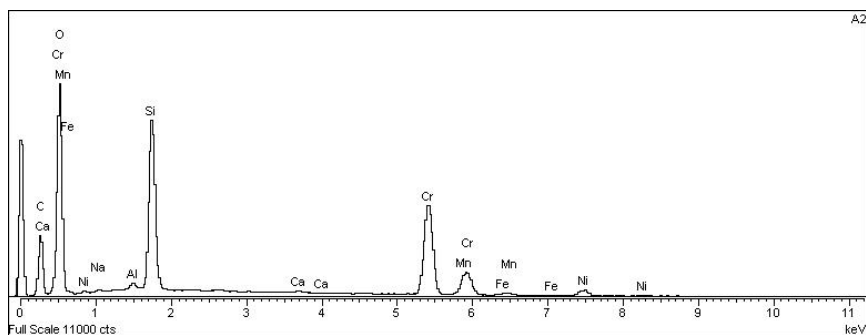




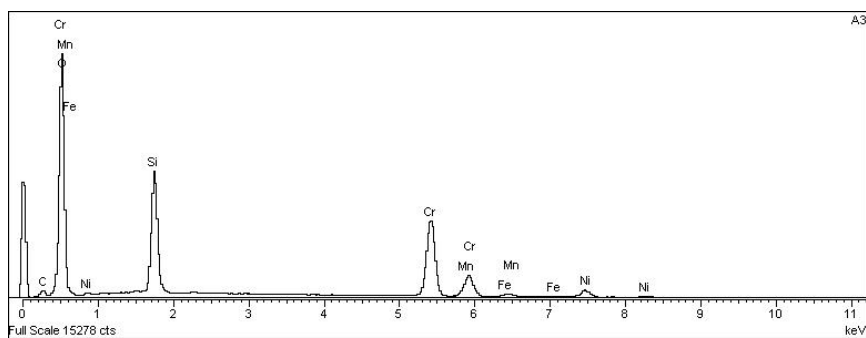
A1



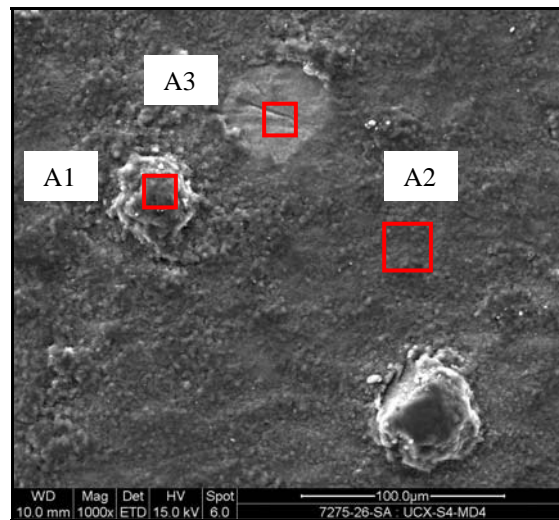
A2



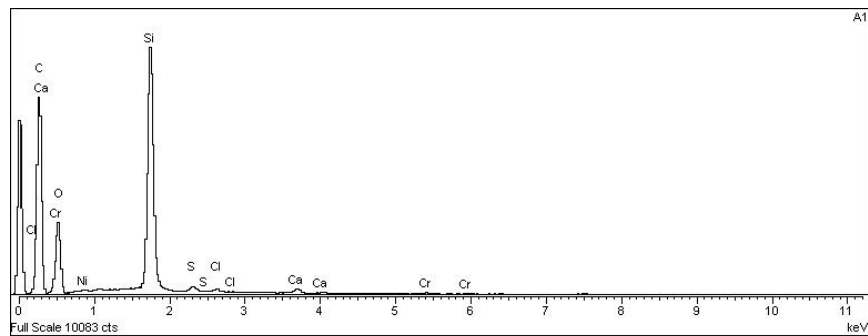
A3



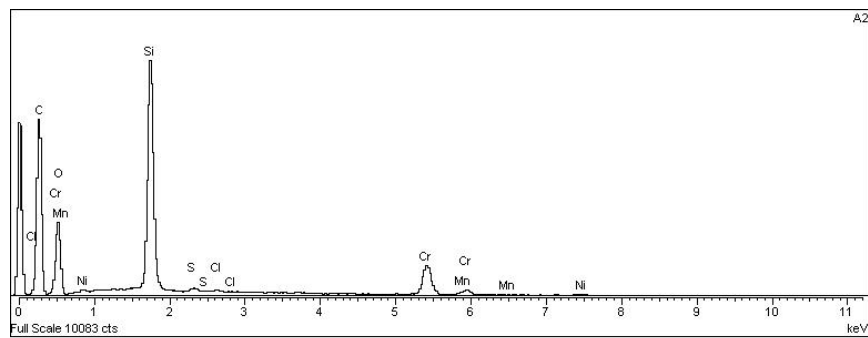
6.4.2 UCX after 500h at 650°C



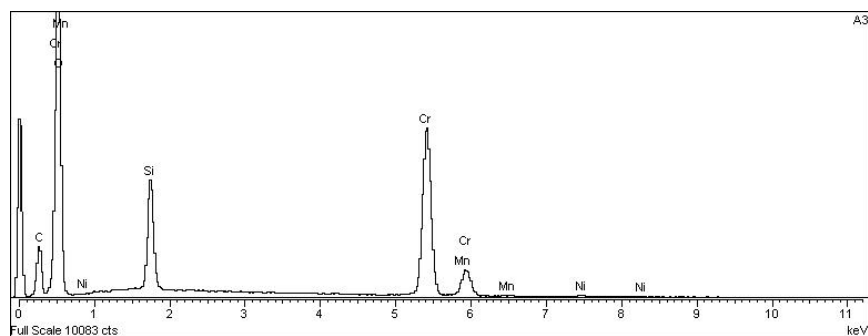
A1



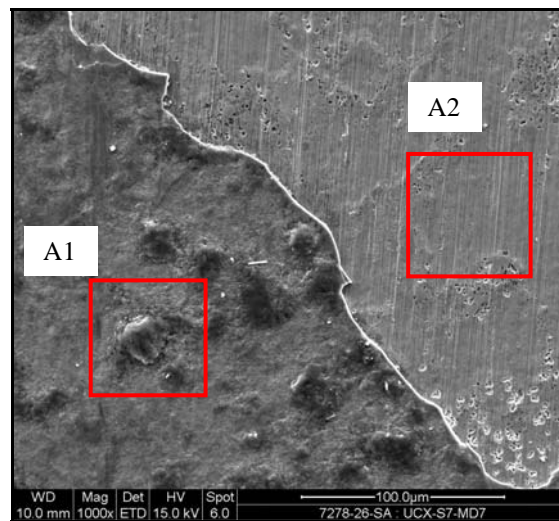
A2



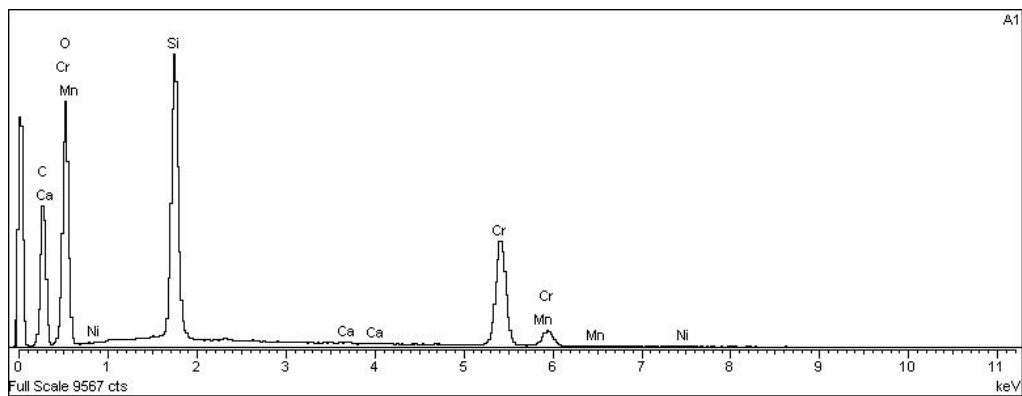
A3



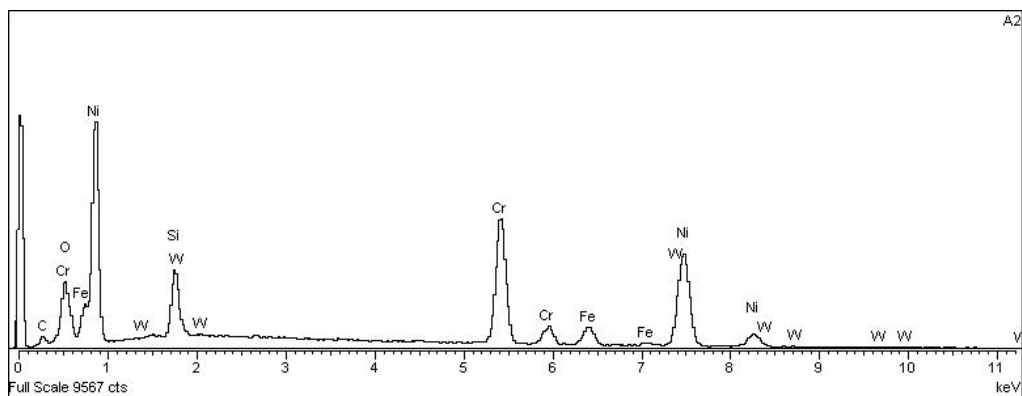
6.4.3 UCX after 1000h at 650°C

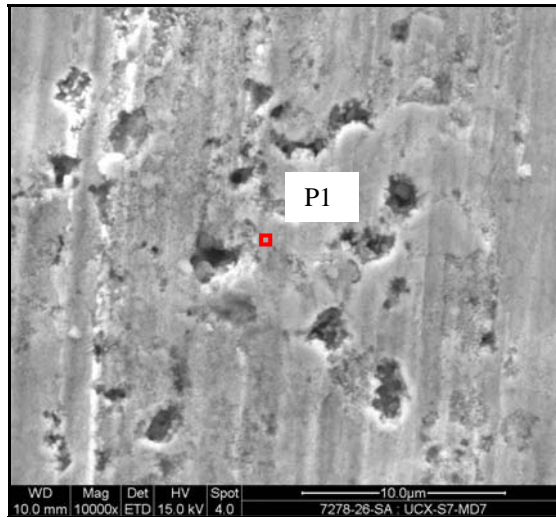


A1

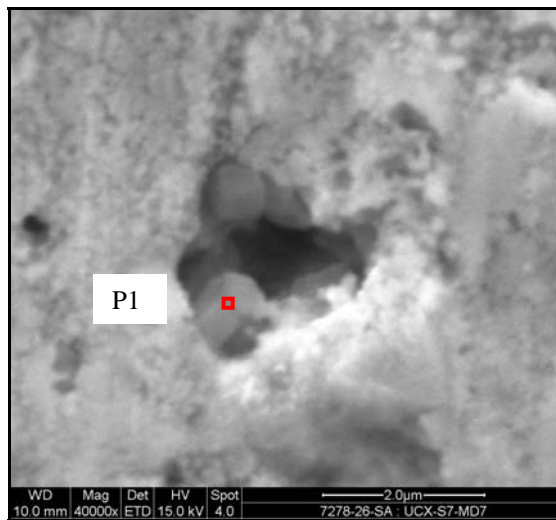
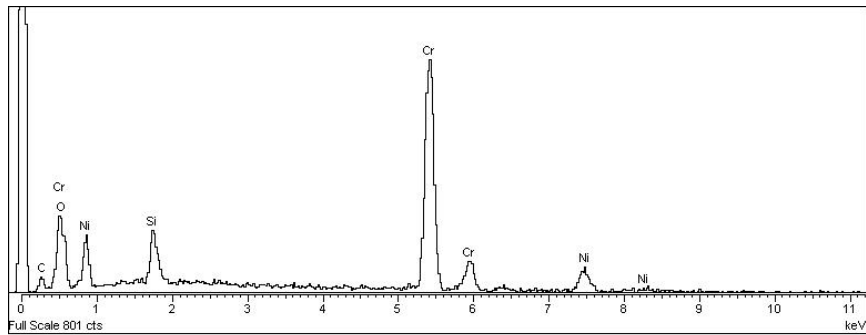


A2

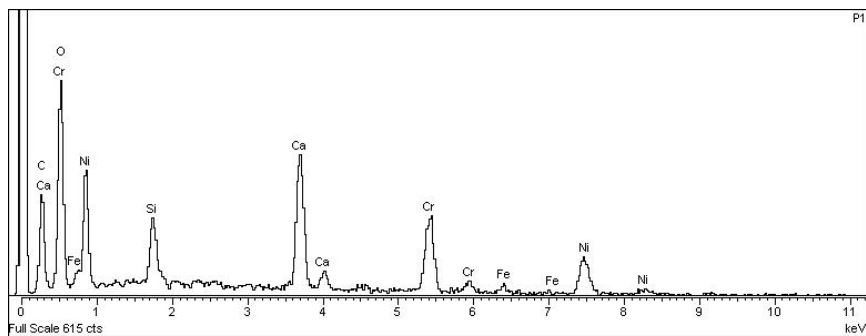




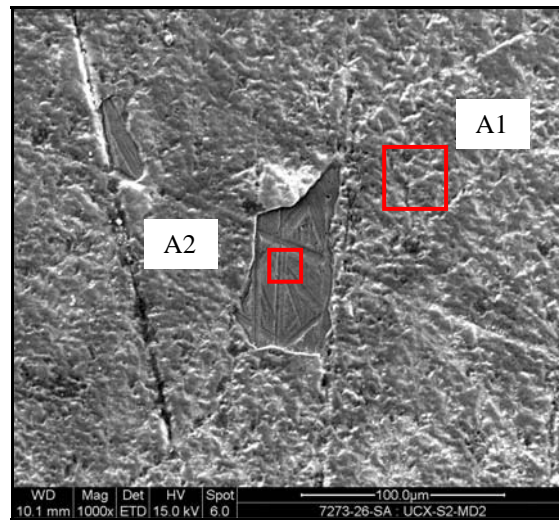
P1



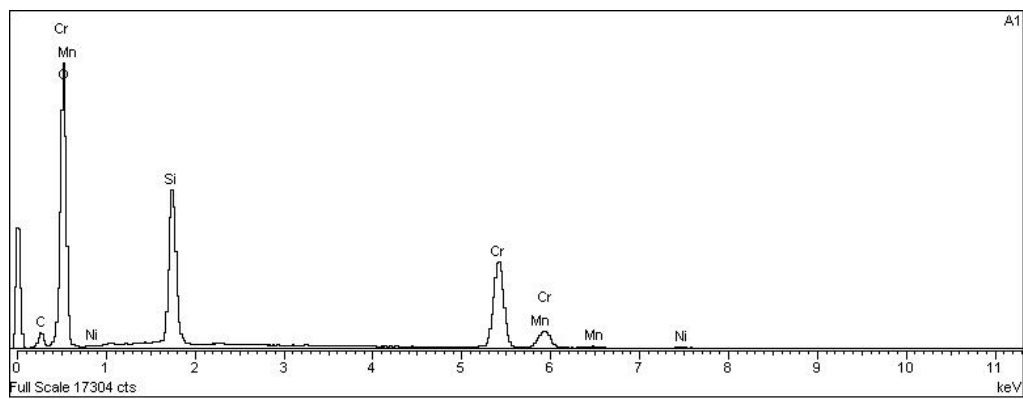
P1



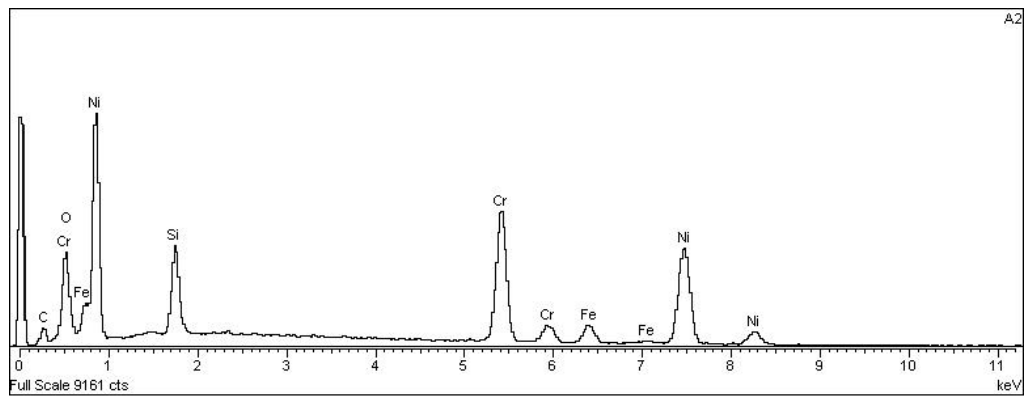
6.4.4 UCX after 100h at 750°C



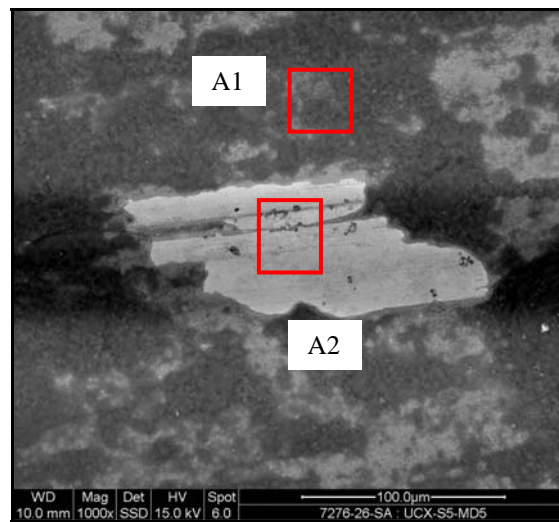
A1



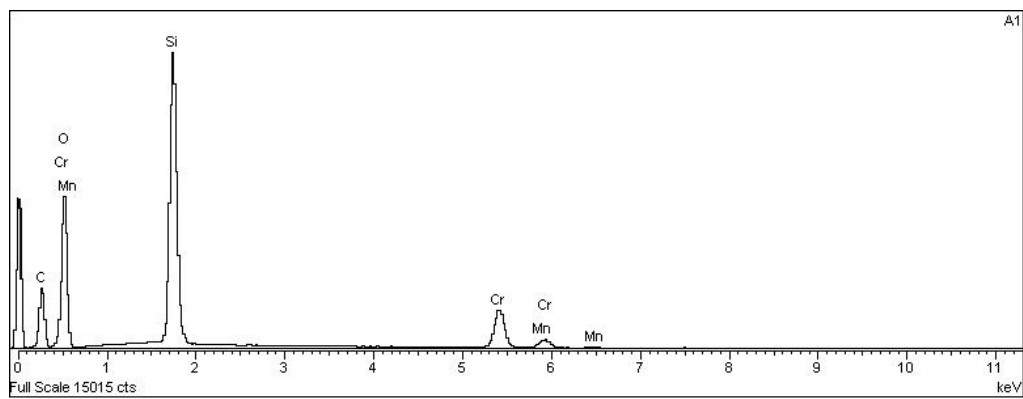
A2



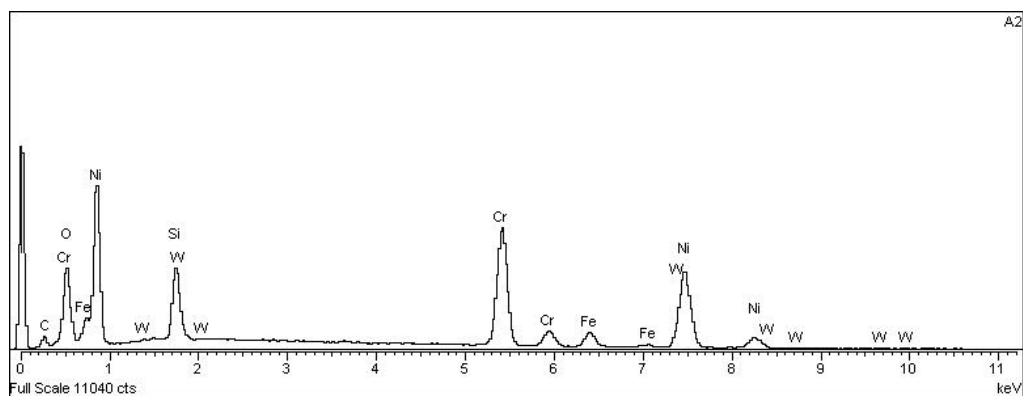
6.4.5 UCX after 500h at 750°C

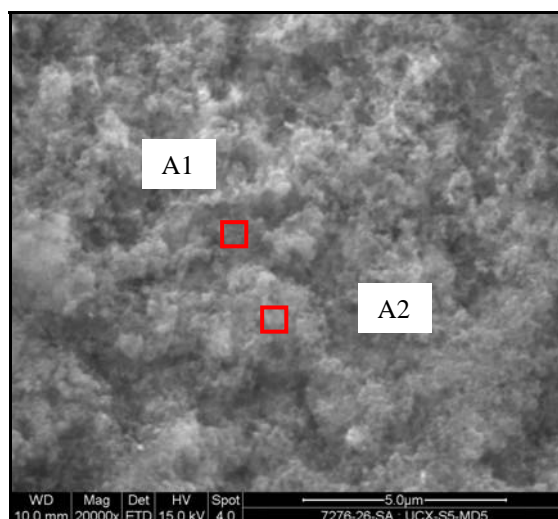


A1

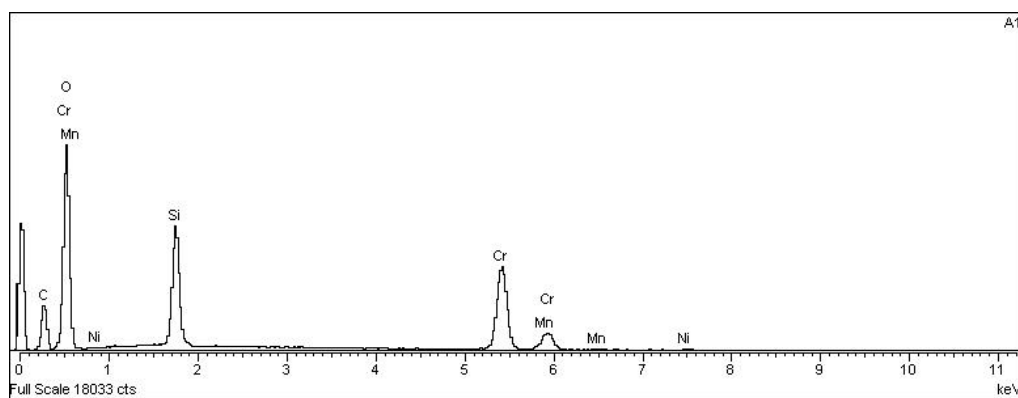


A2

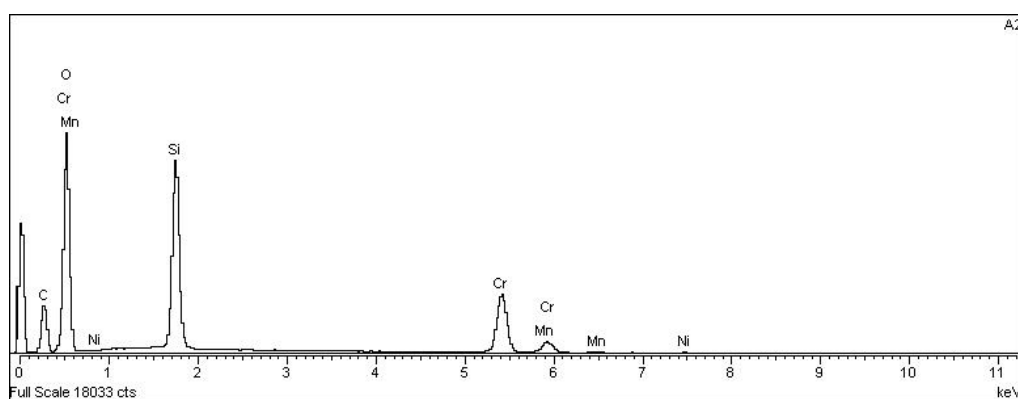


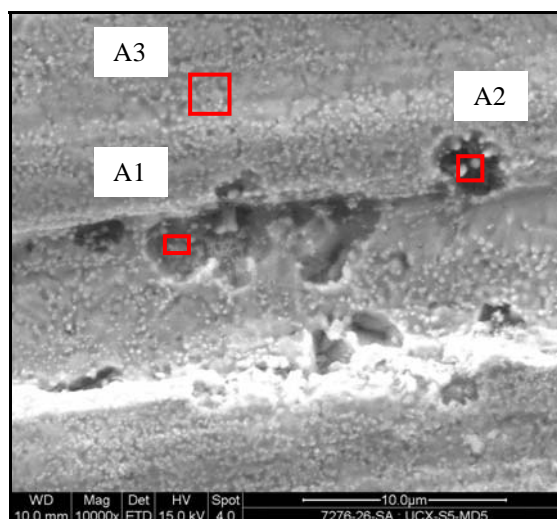


A1

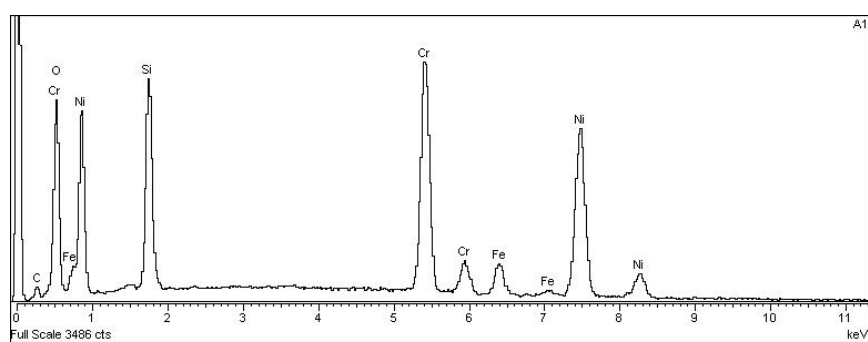


A2

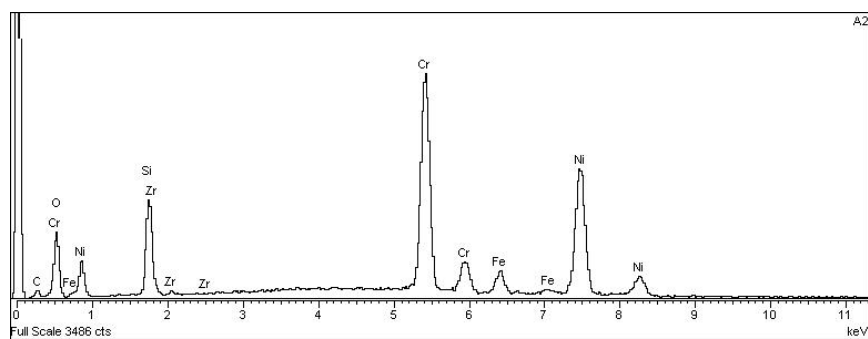




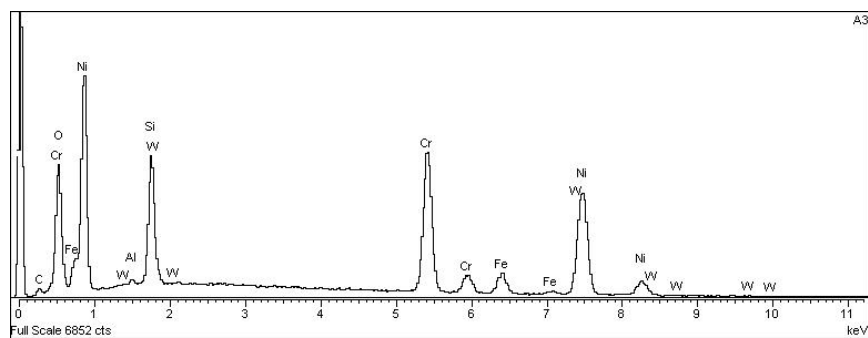
A1



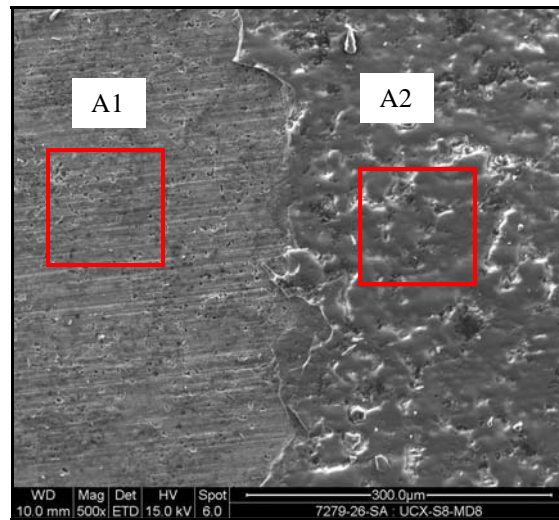
A2



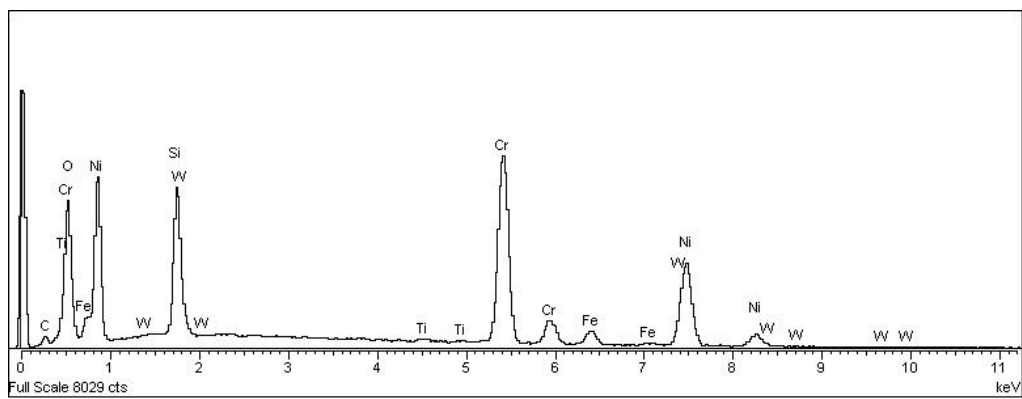
A3



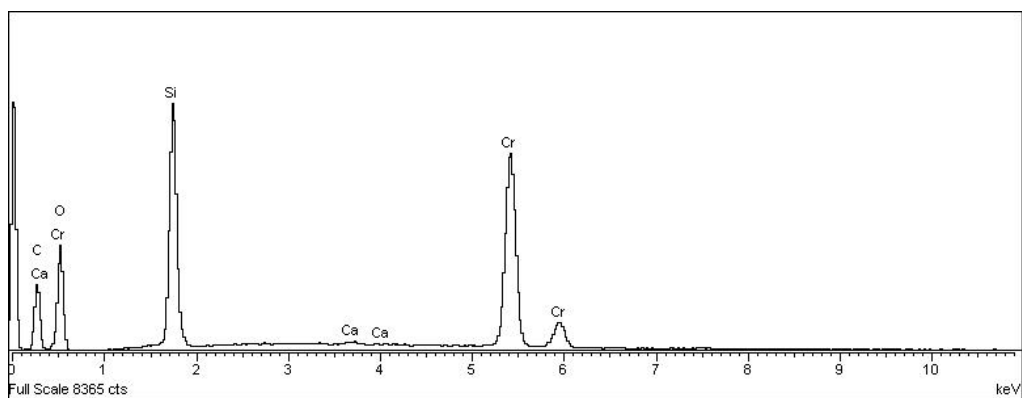
6.4.6 UCX after 1000h at 750°C

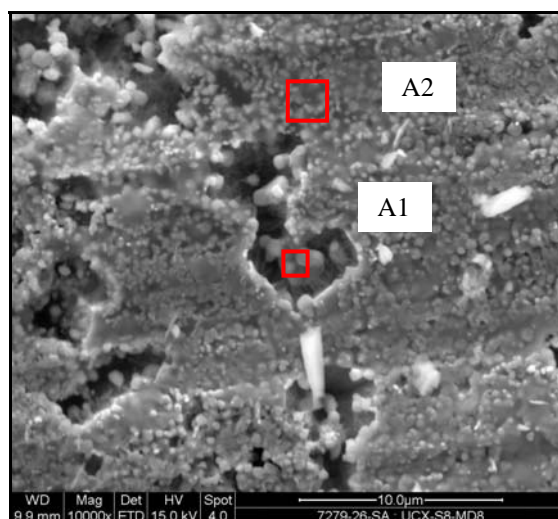


A1

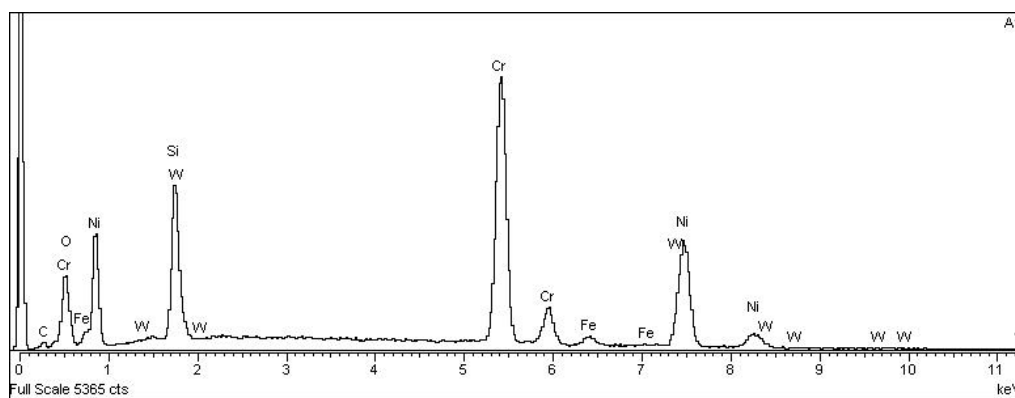


A2

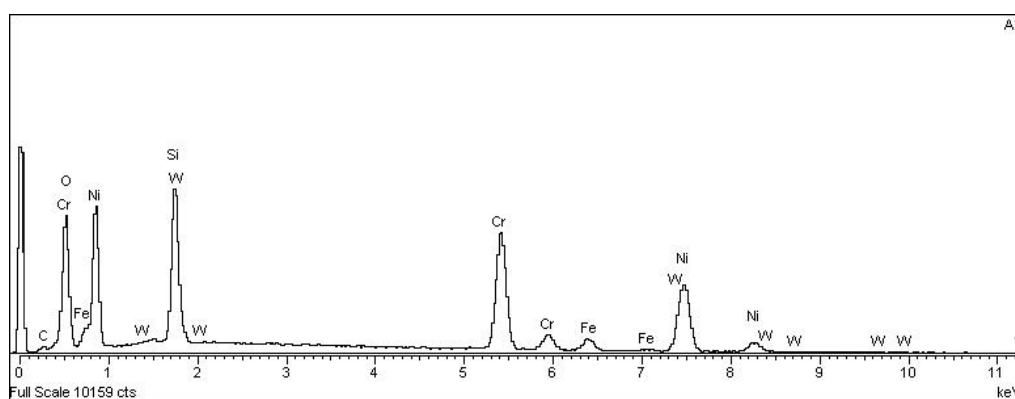




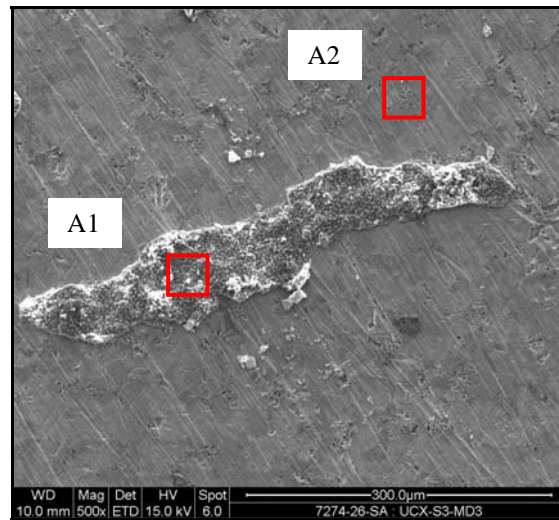
A1



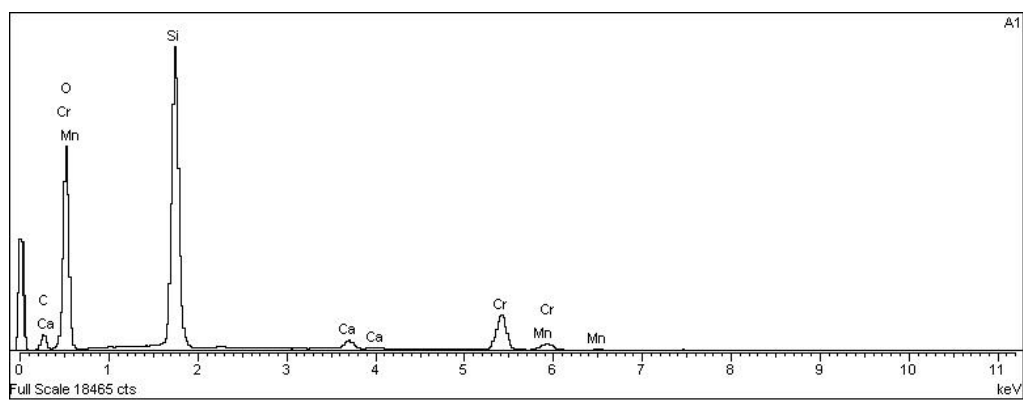
A2



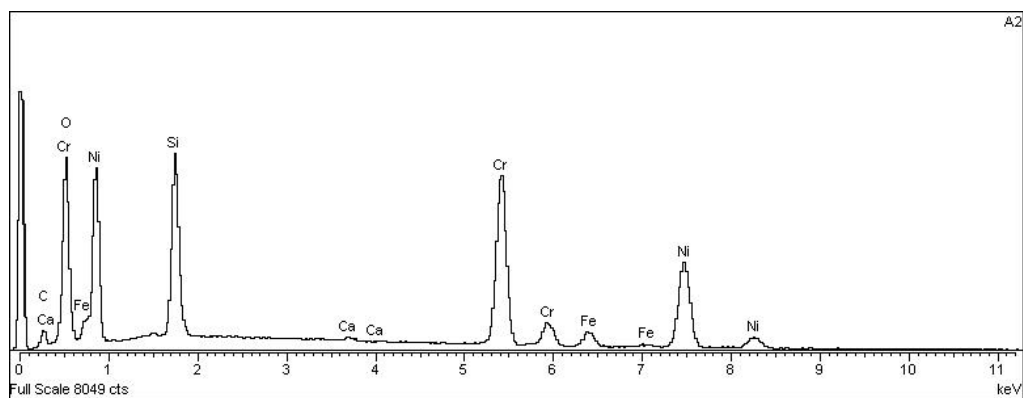
6.4.7 UCX after 100h at 850°C

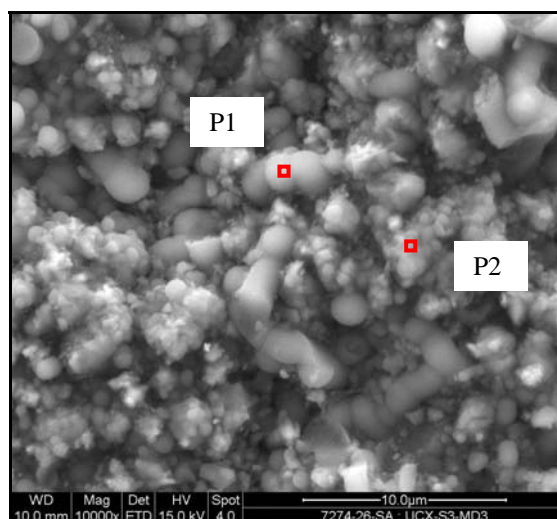


A1

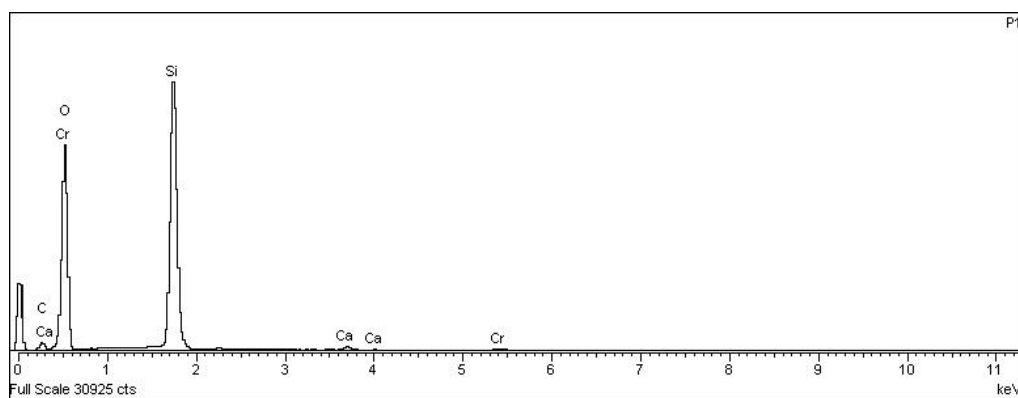


A2

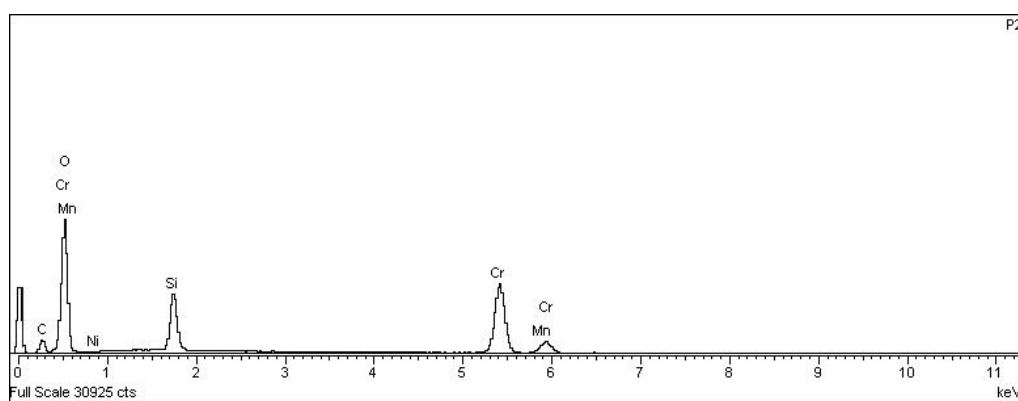


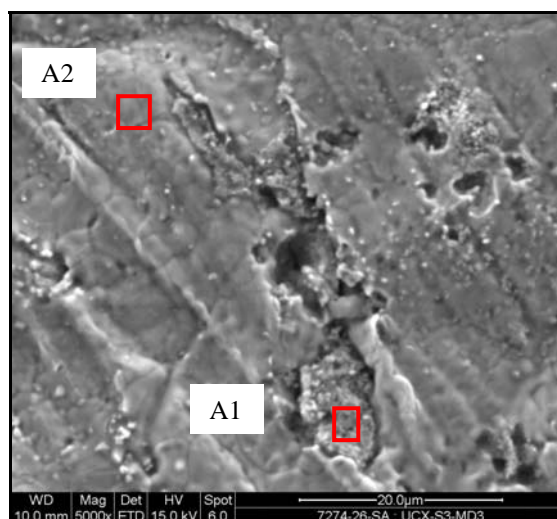


P1

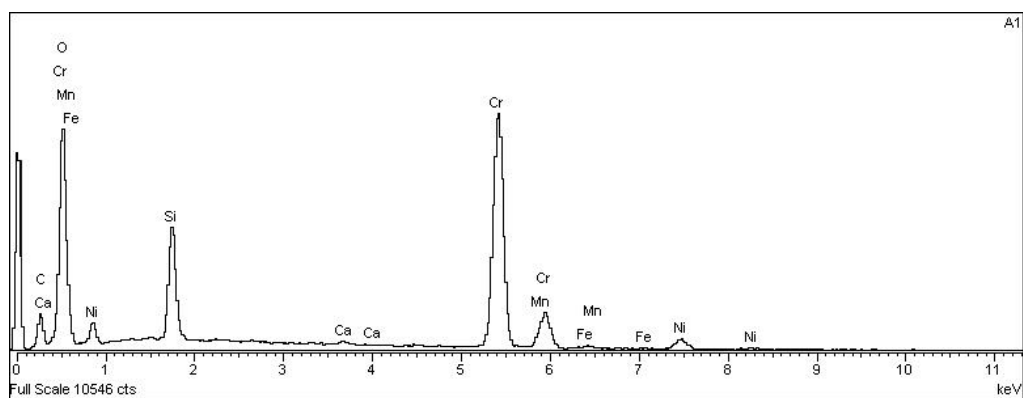


P2

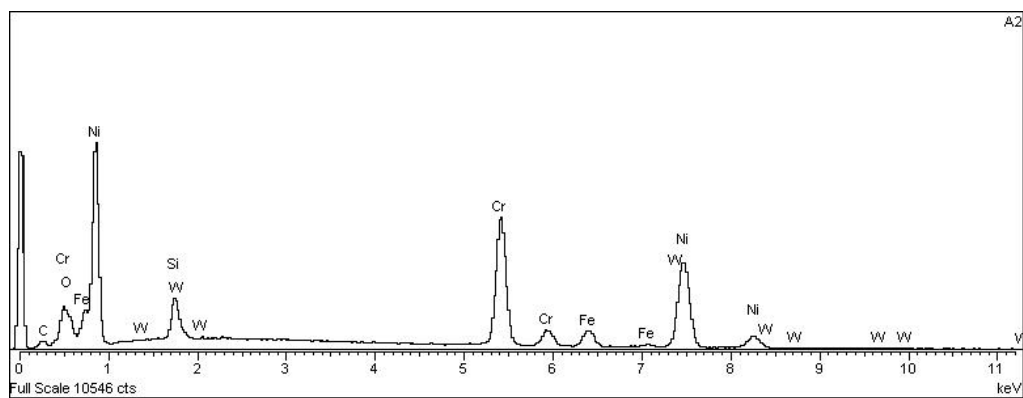




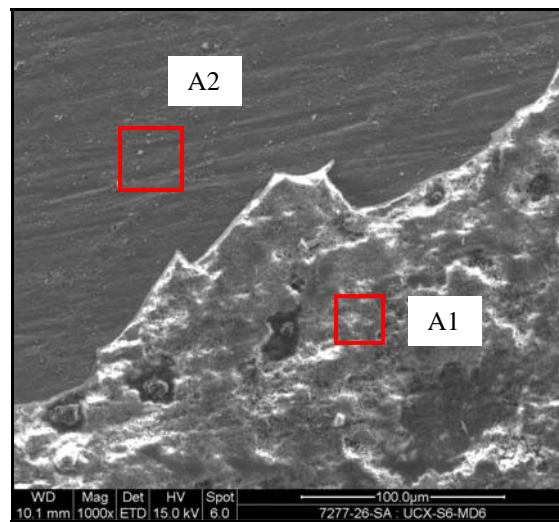
A1



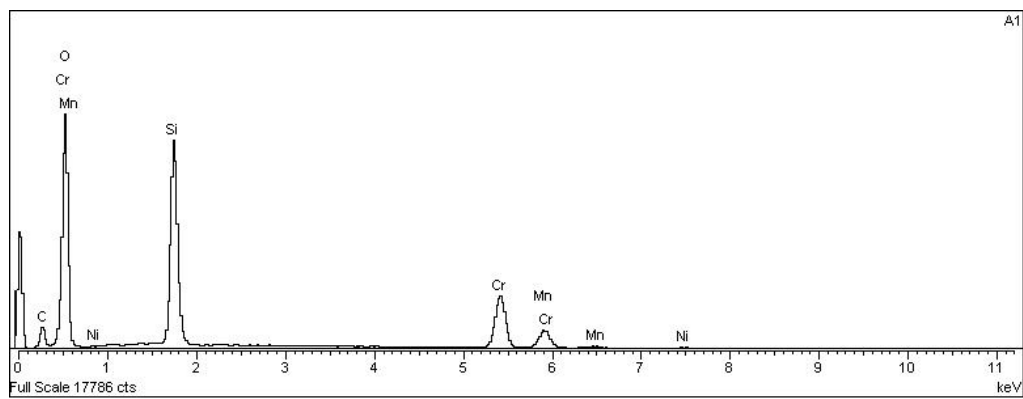
A2



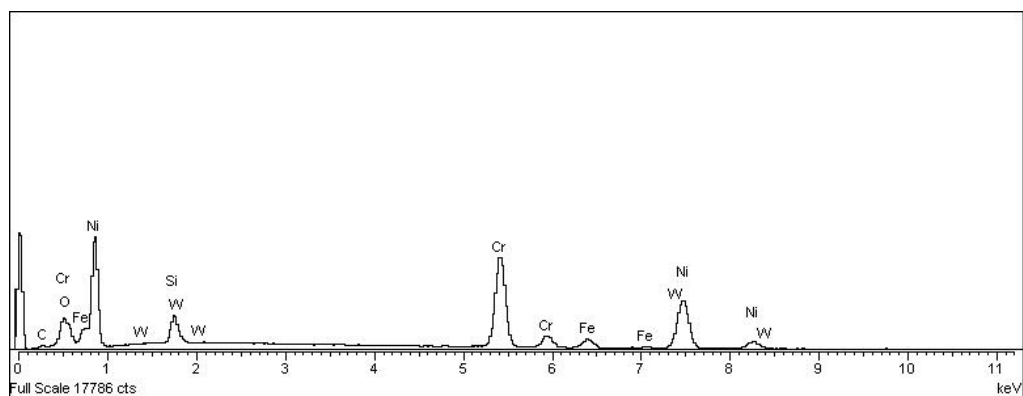
6.4.8 UCX after 500h at 850°C

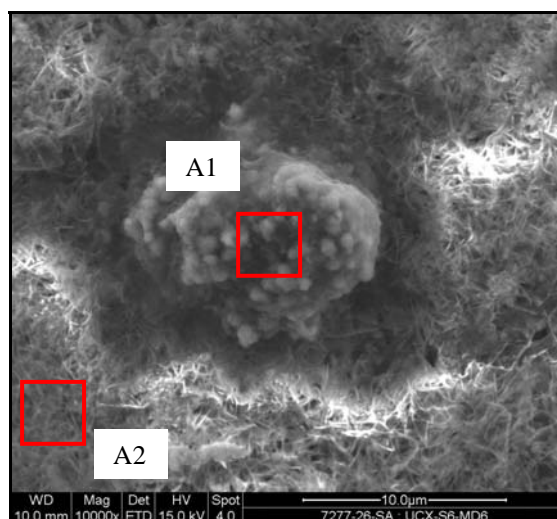


A1

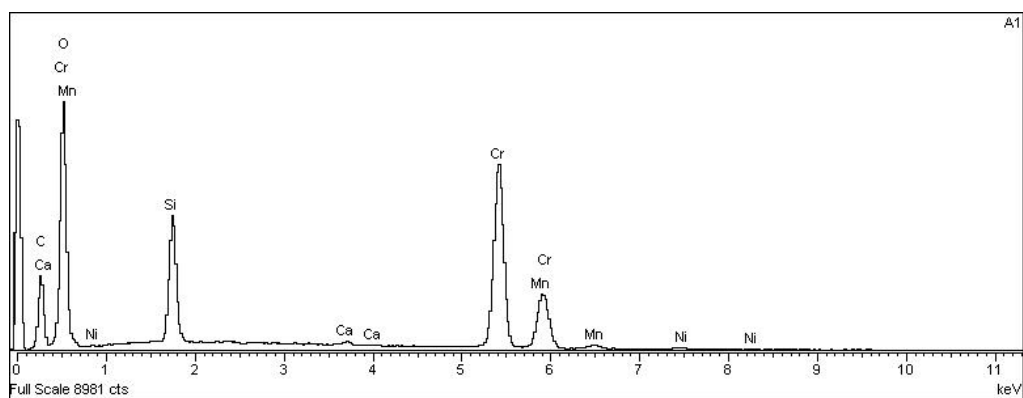


A2

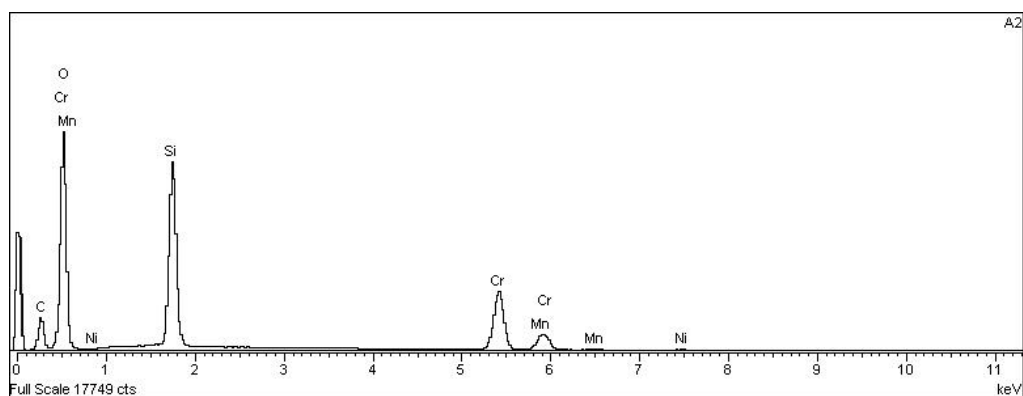


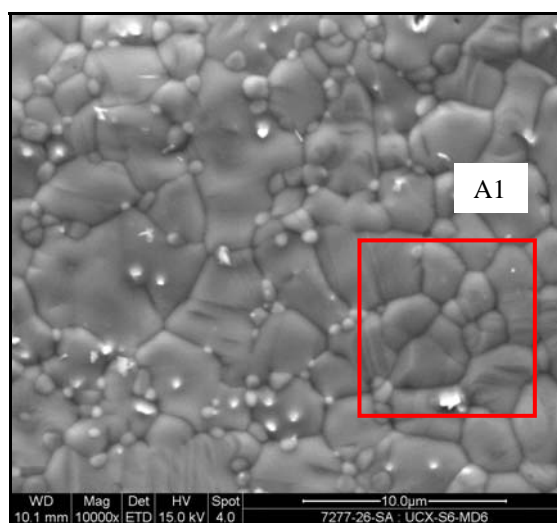


A1

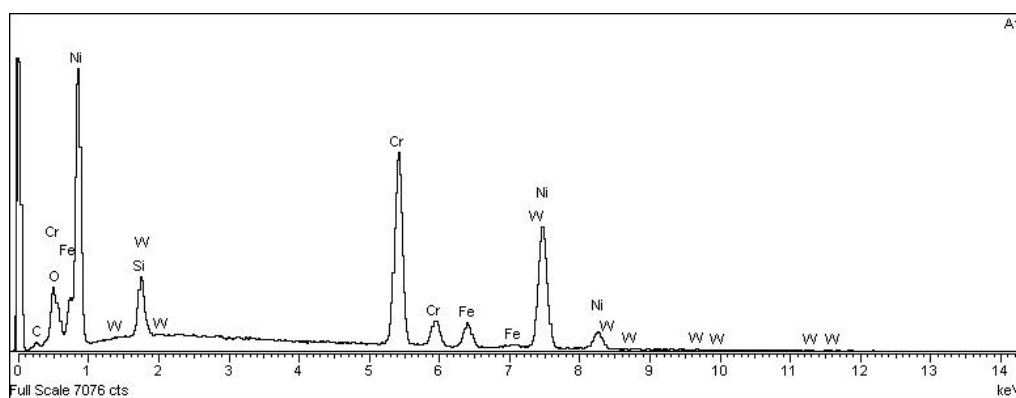


A2

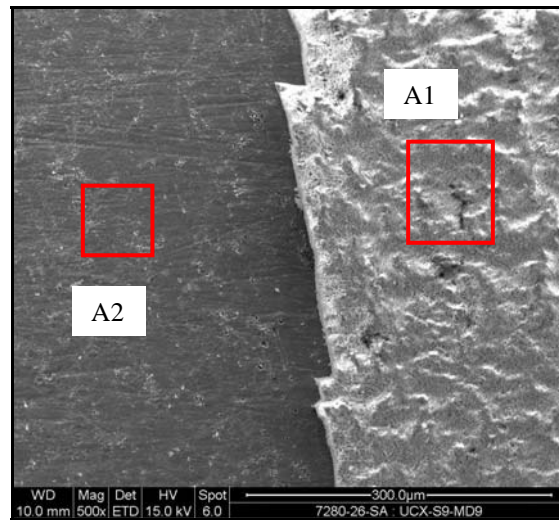




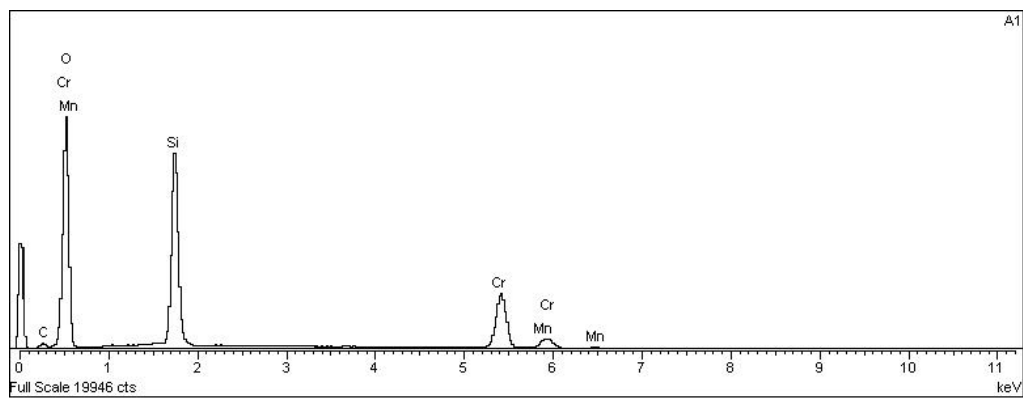
A1



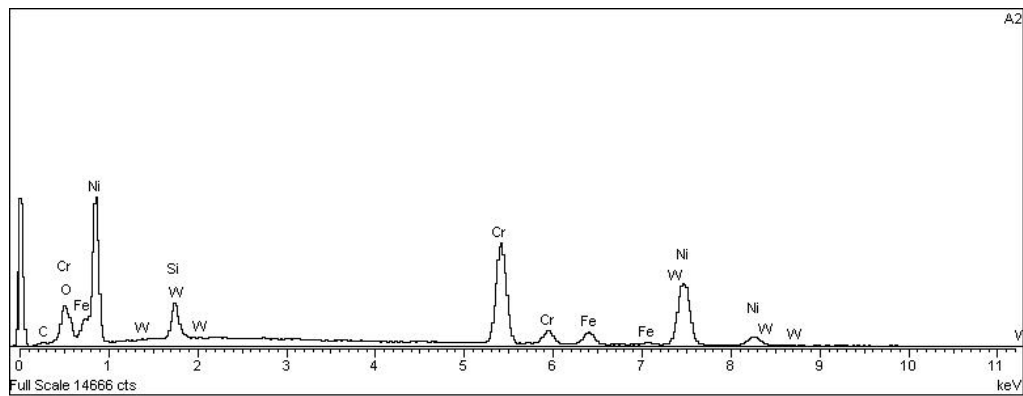
6.4.9 UCX after 1000h at 850°C

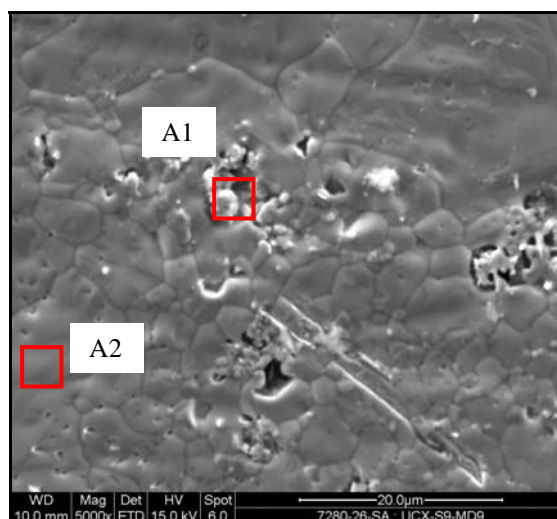


A1

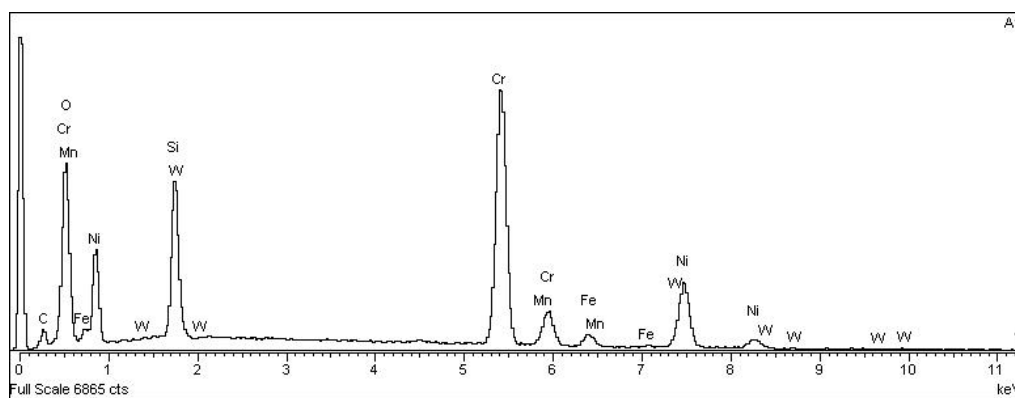


A2

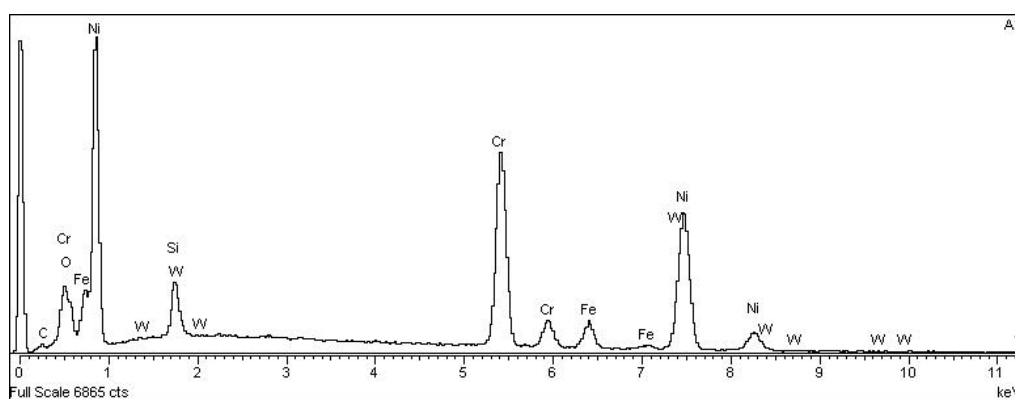


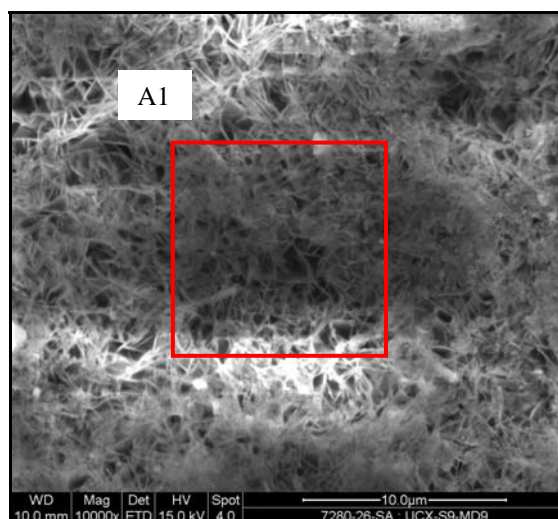


A1

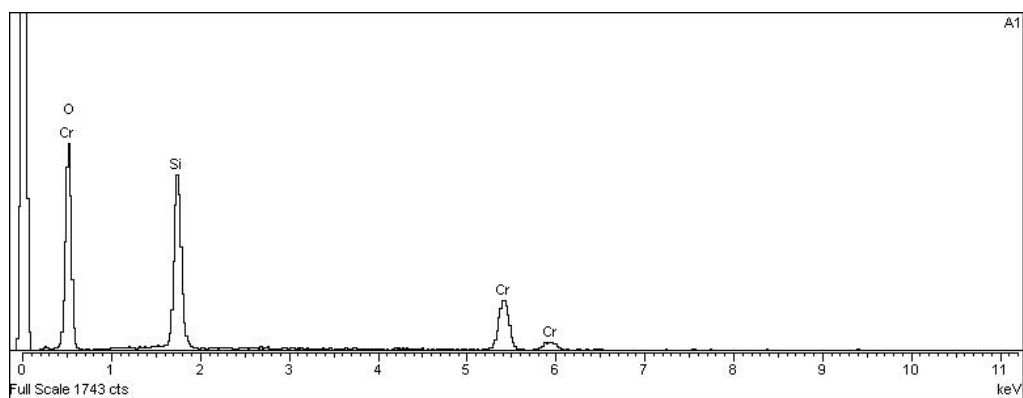


A2



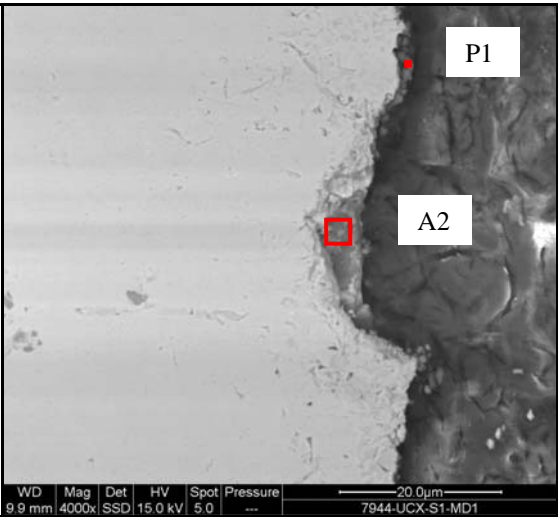


A1

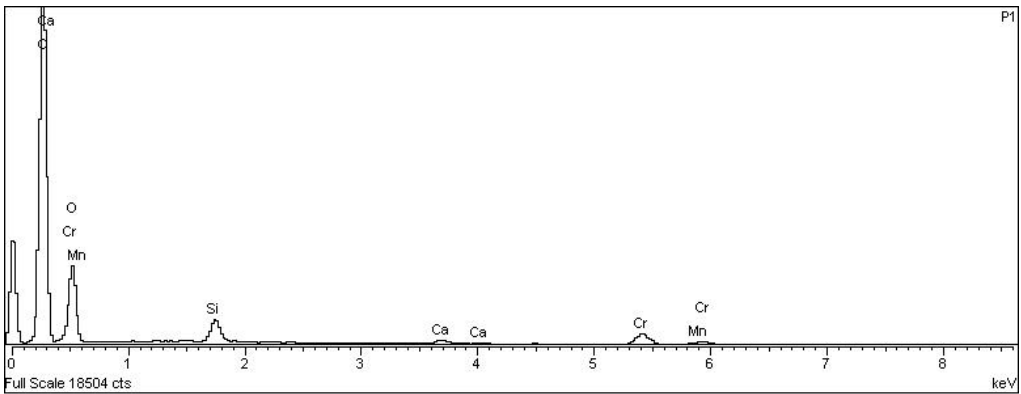


6.5 Metallographic Examination

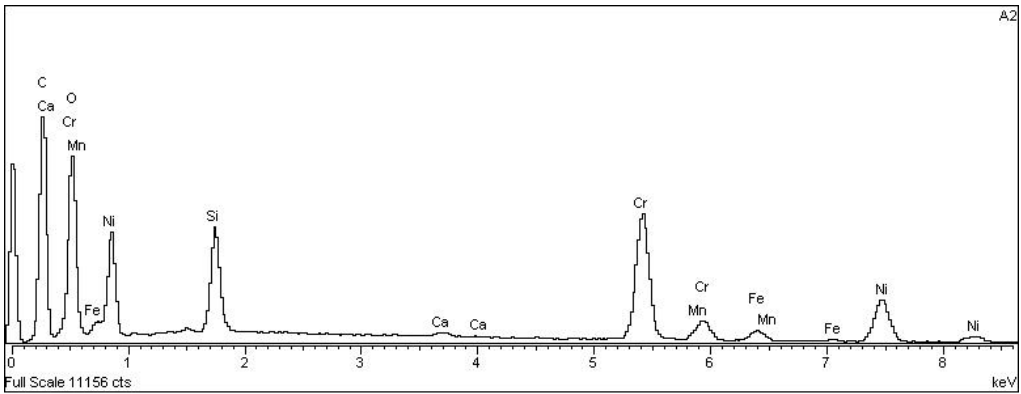
6.5.1 UCX after 100h at 650°C



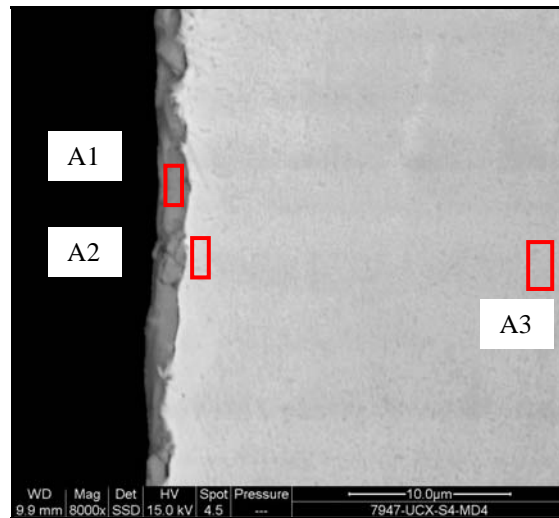
P1



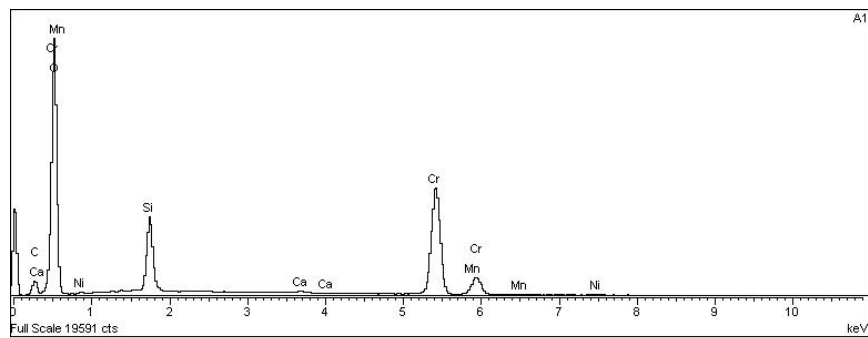
A2



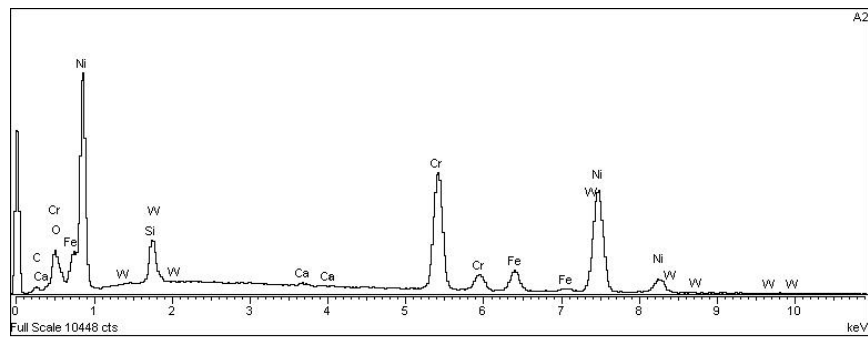
6.5.2 UCX after 500h at 650°C



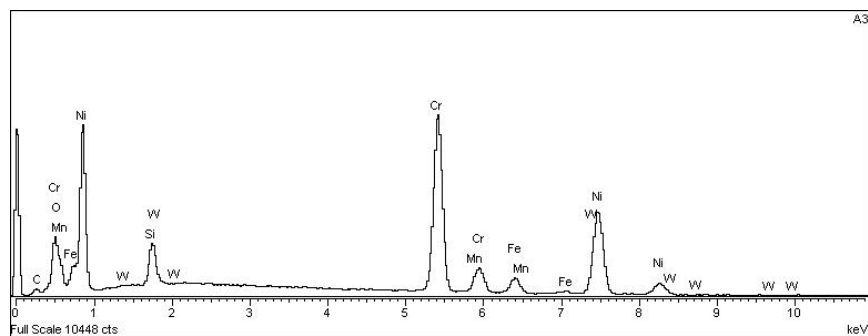
A1



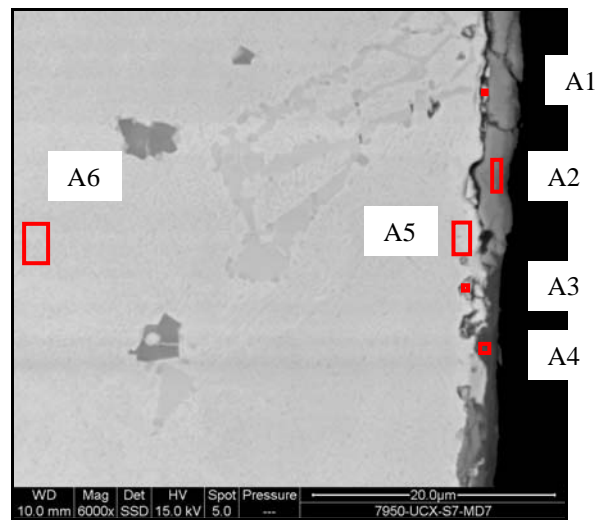
A2



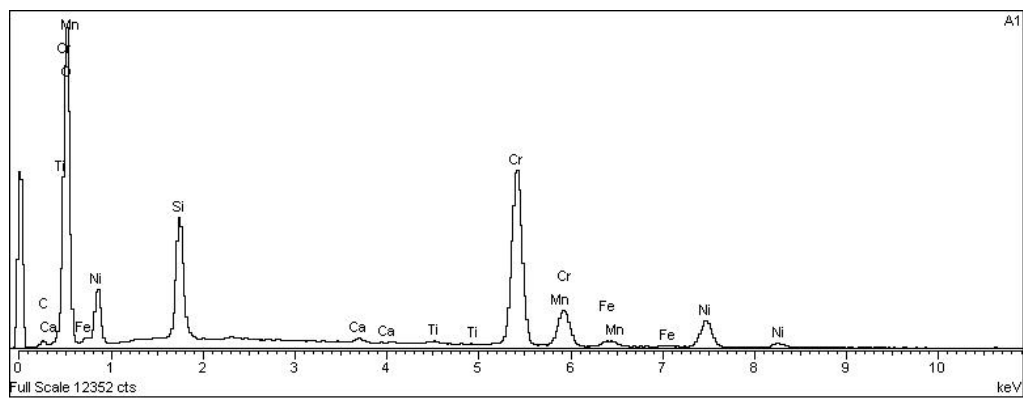
A3



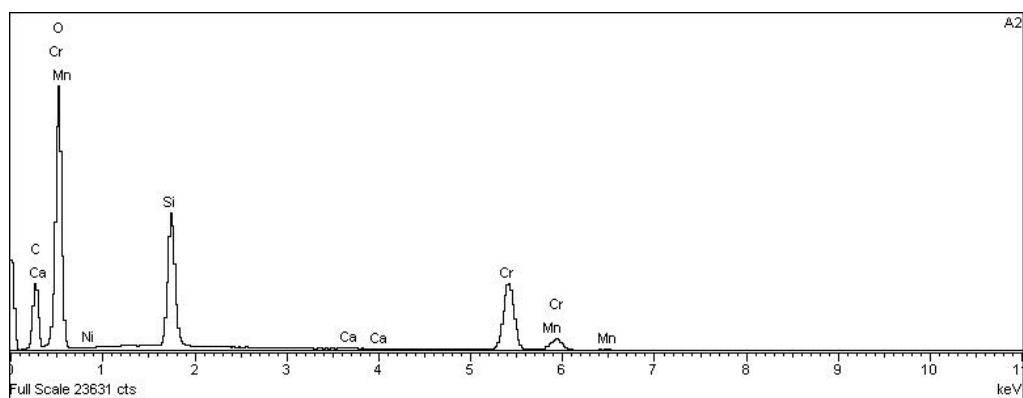
6.5.3 UCX after 1000h at 650°C



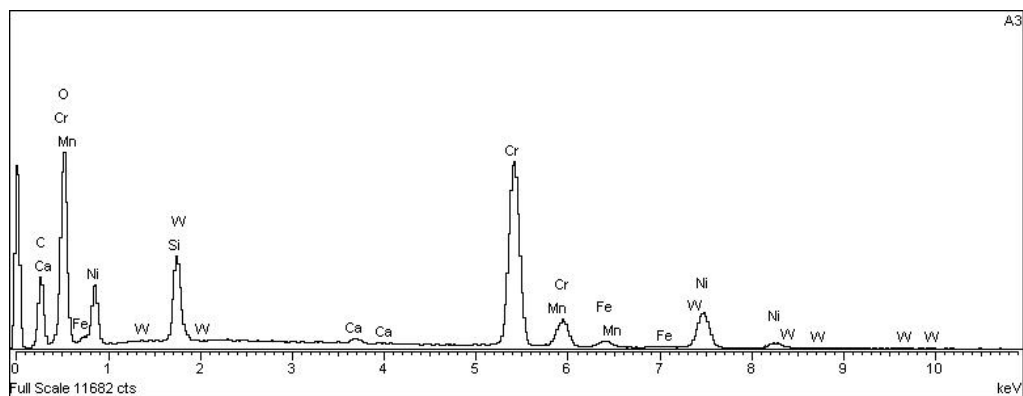
A1



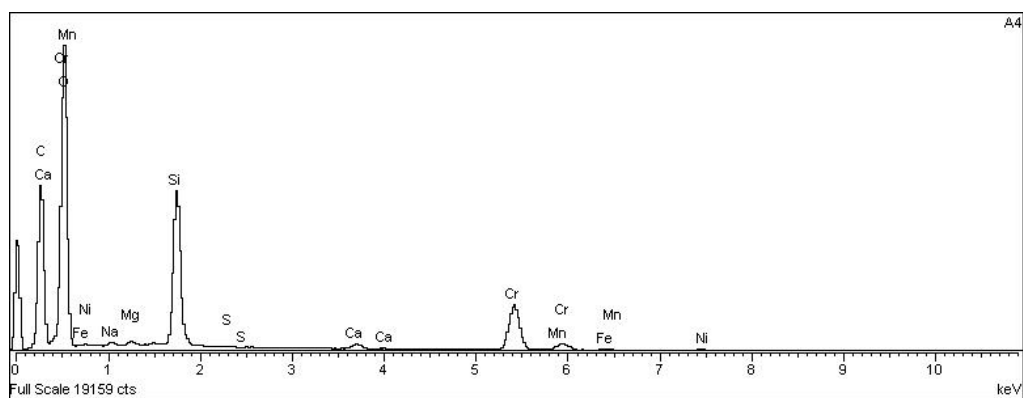
A2



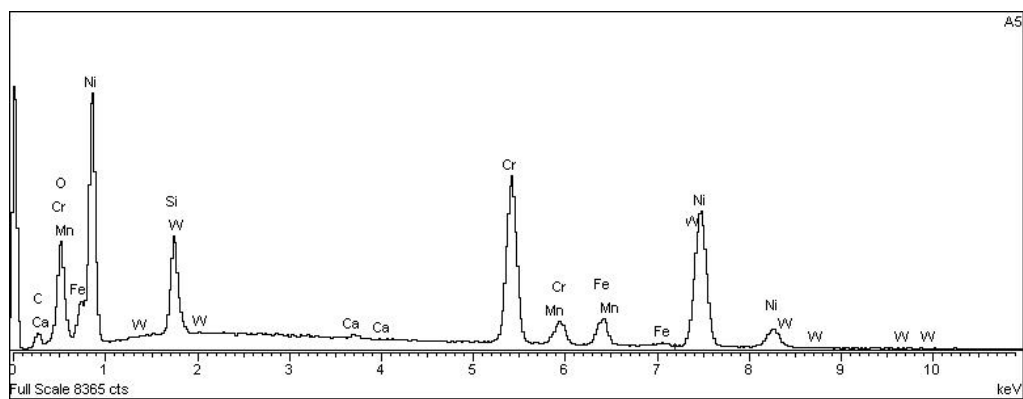
A3



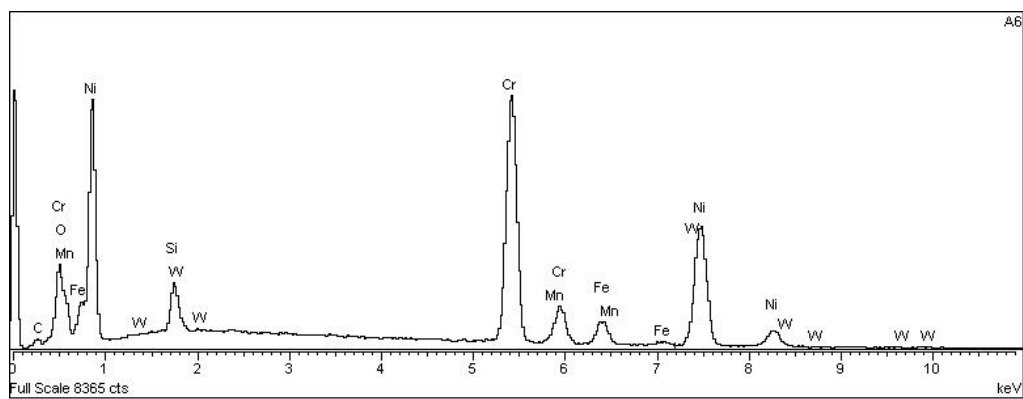
A4



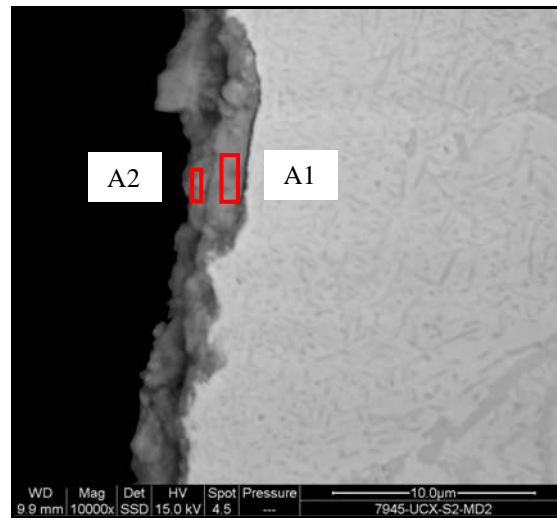
A5



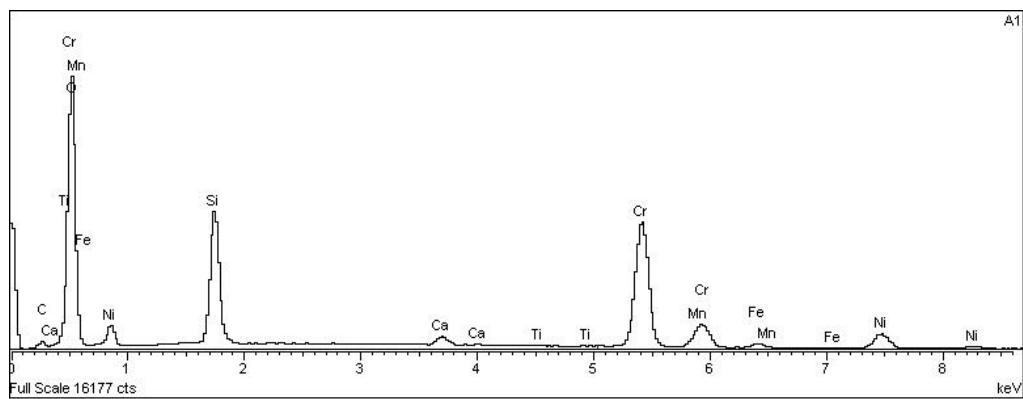
A6



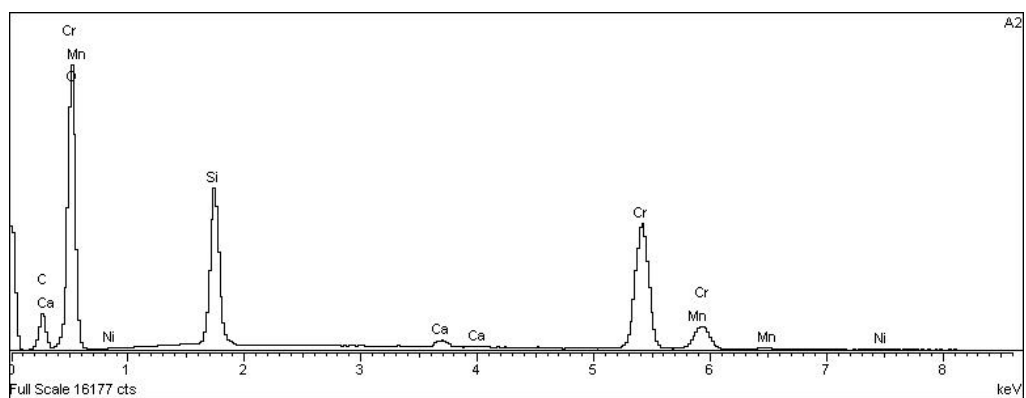
6.5.4 UCX after 100h at 750°C



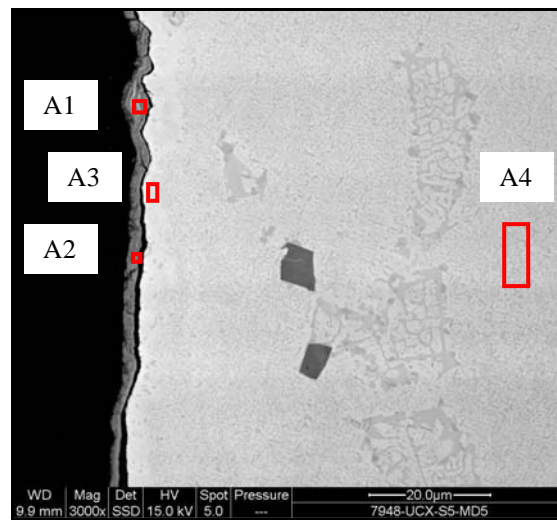
A1



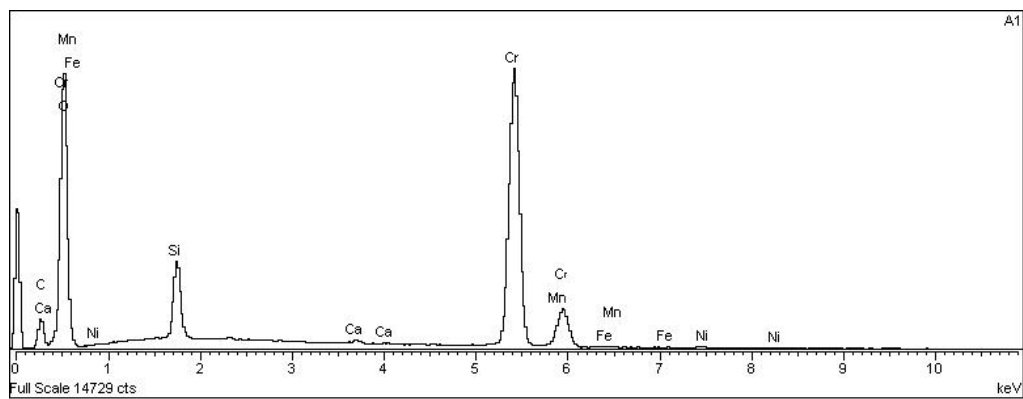
A2



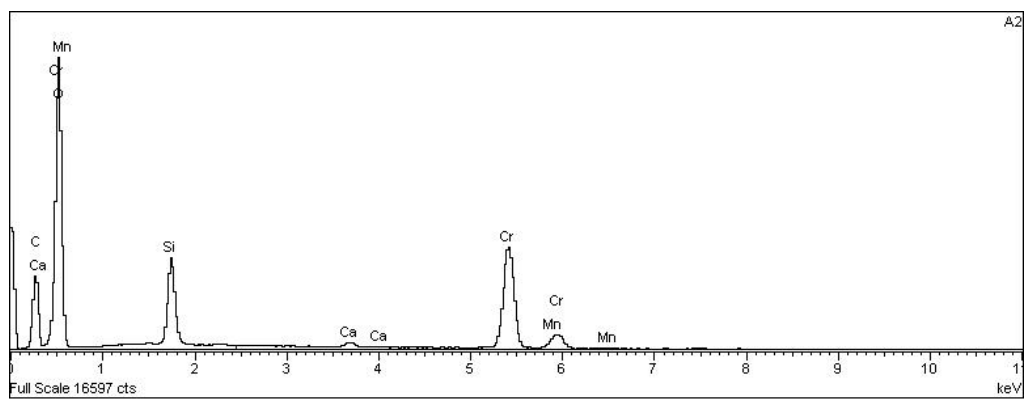
6.5.5 UCX after 500h at 750°C



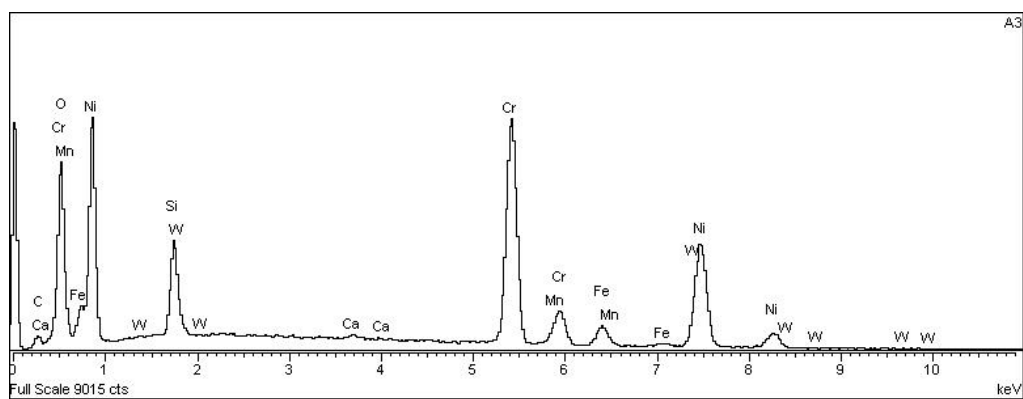
A1



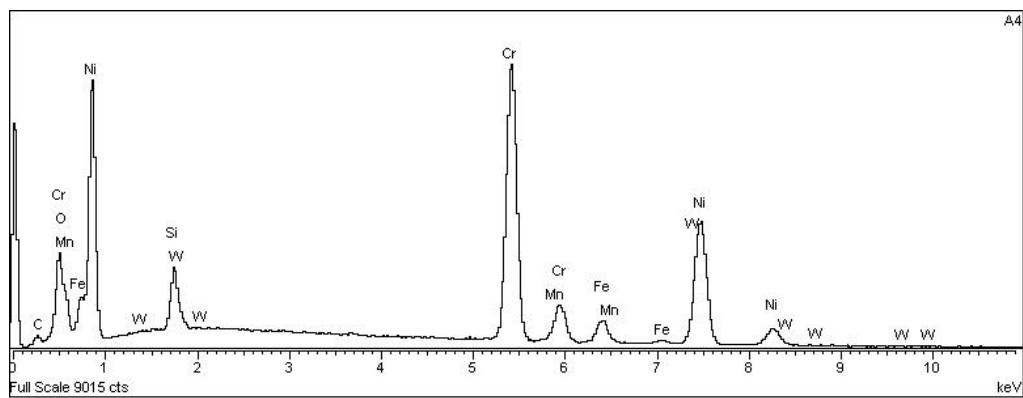
A2

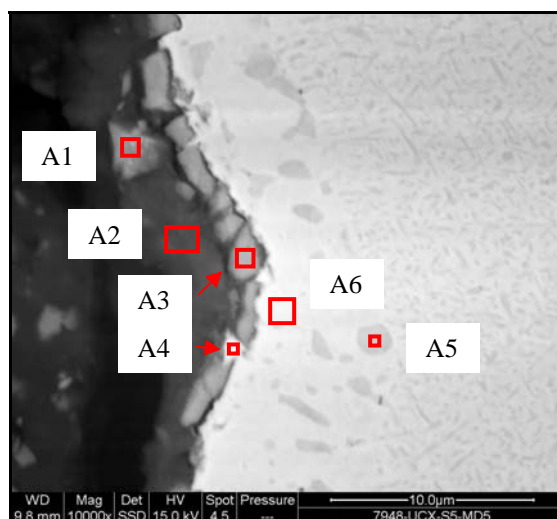


A3

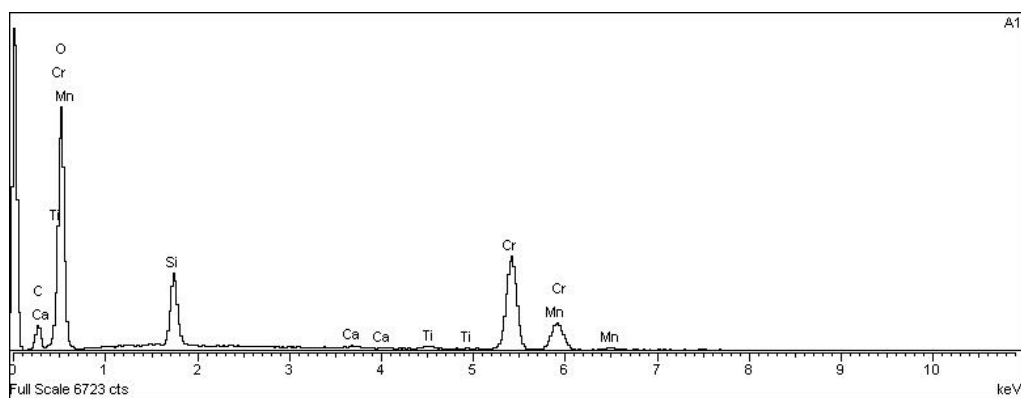


A4

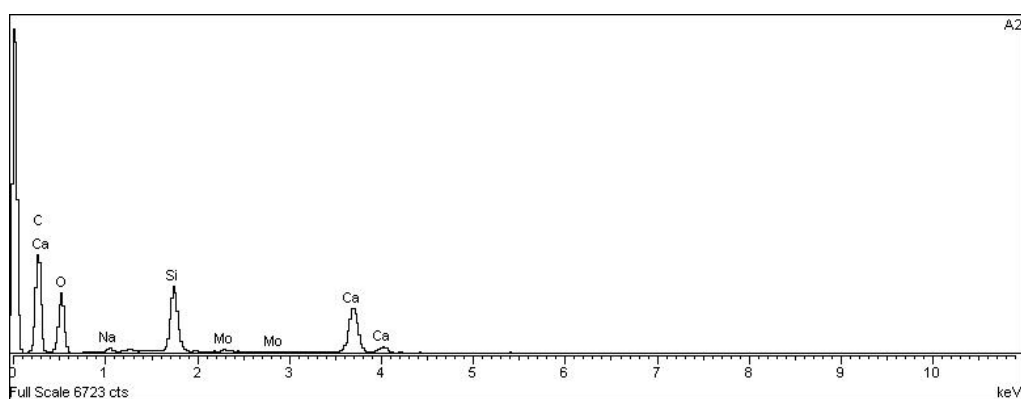




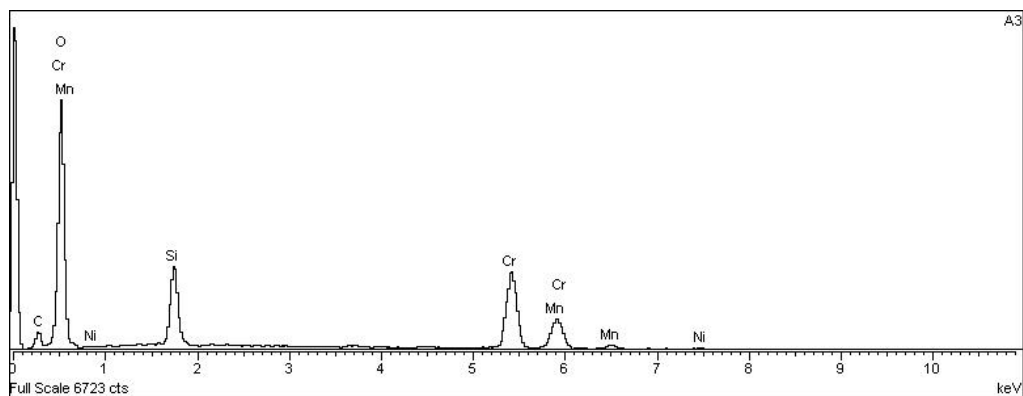
A1



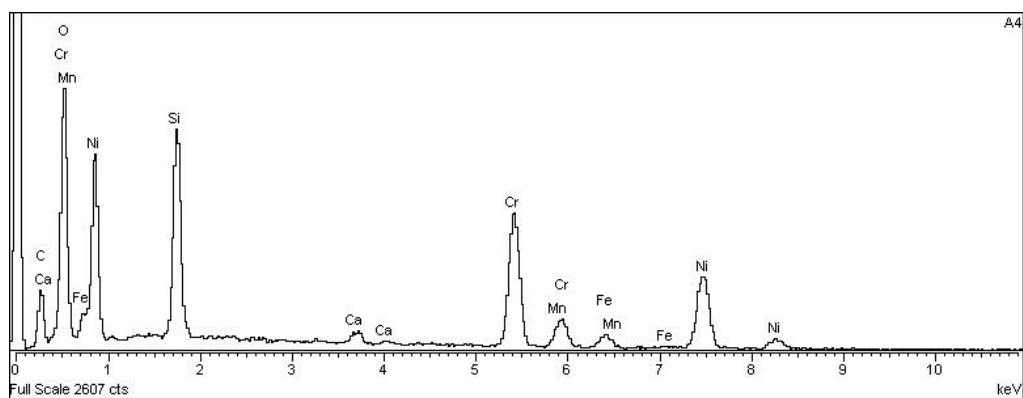
A2



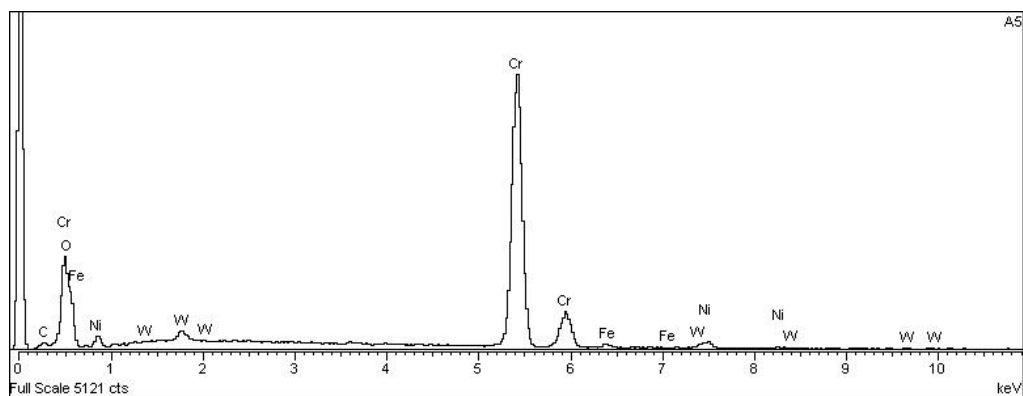
A3



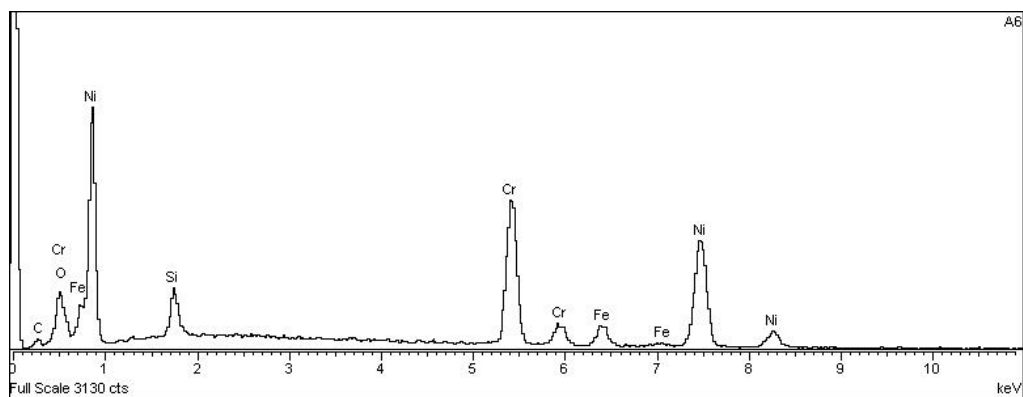
A4



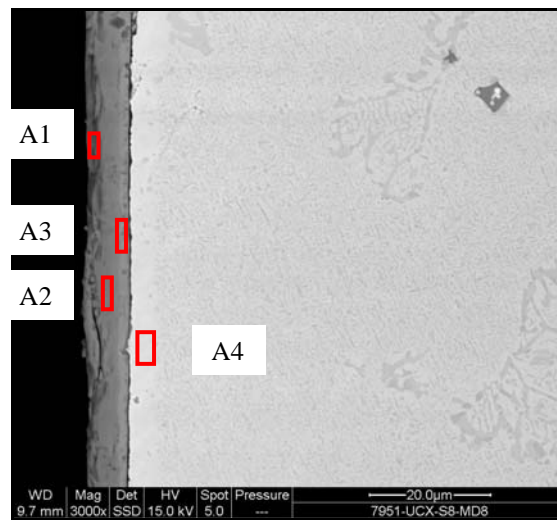
A5



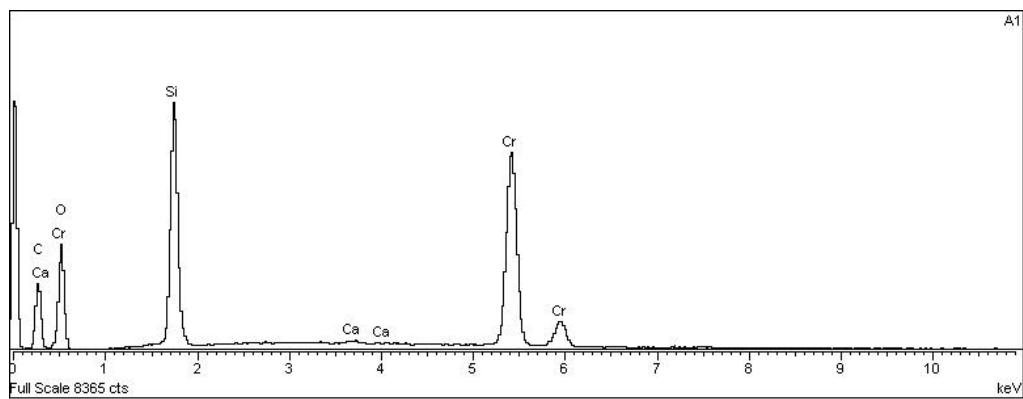
A6



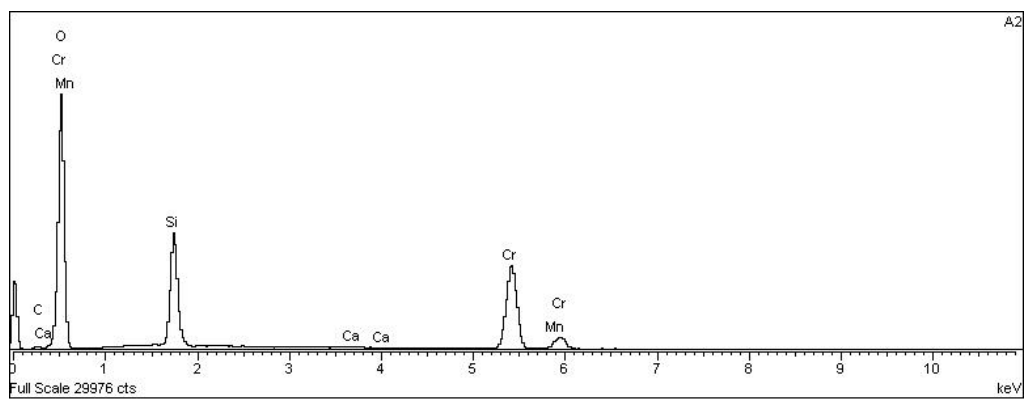
6.5.6 UCX after 1000h at 750°C



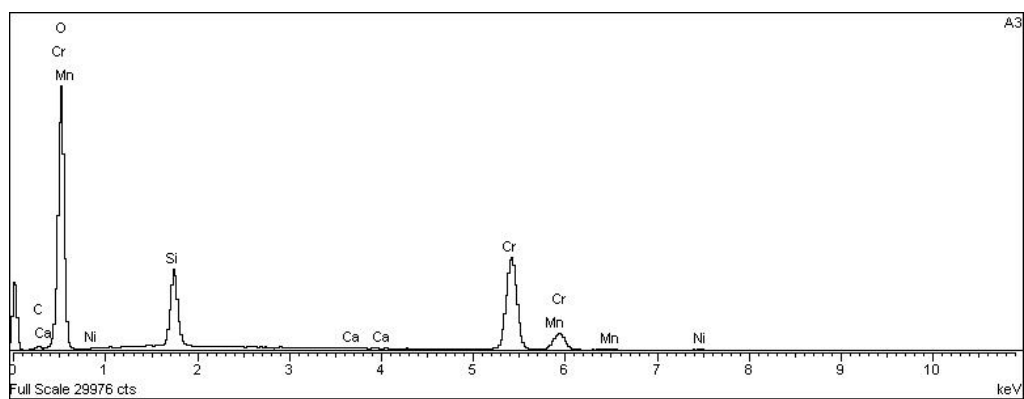
A1



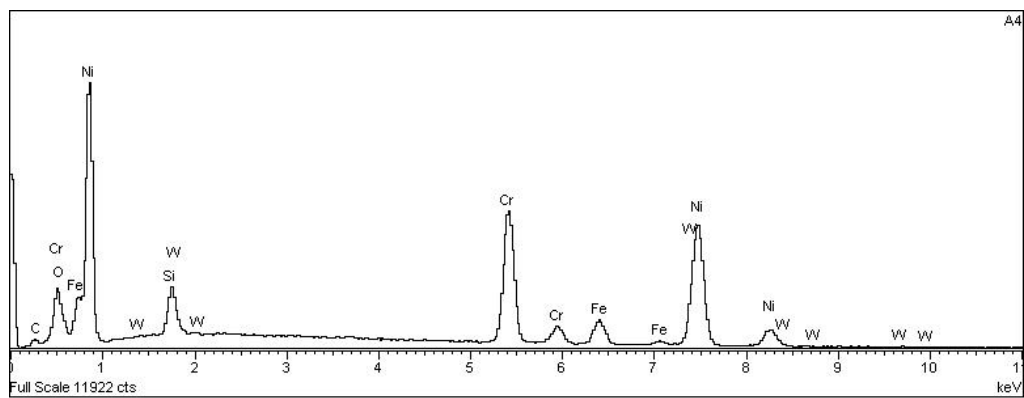
A2

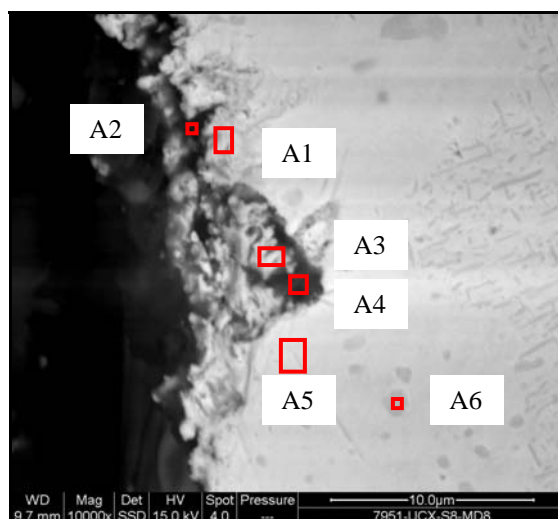


A3

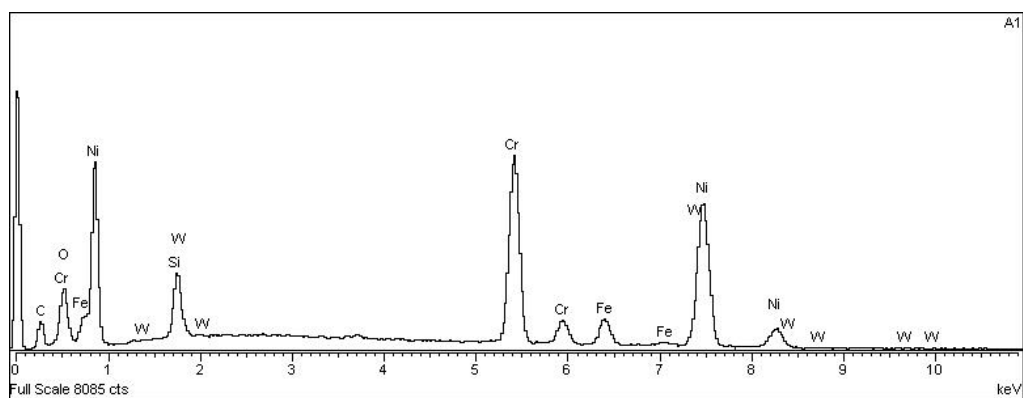


A4

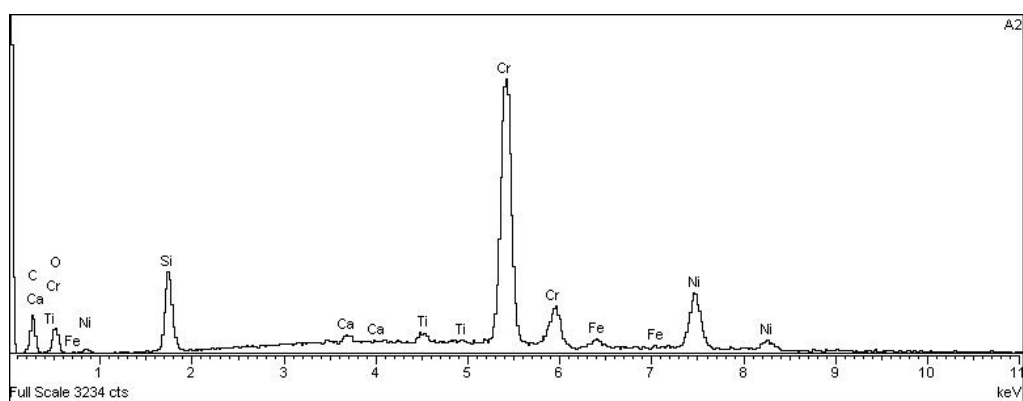




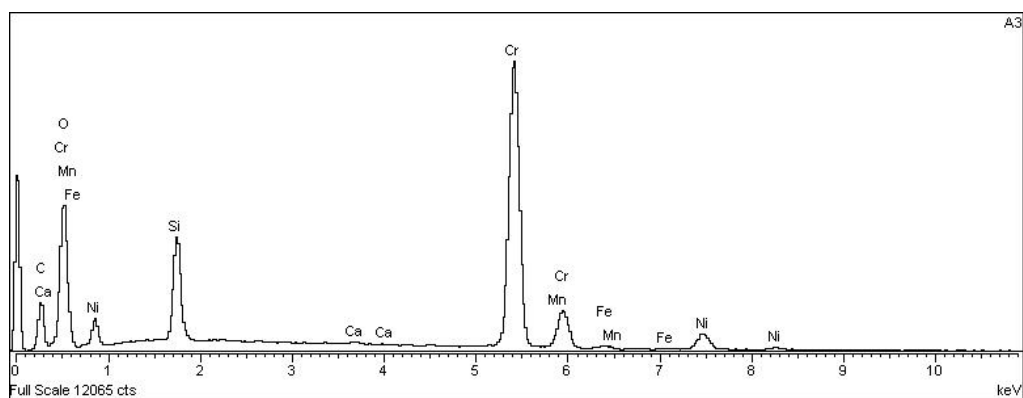
A1



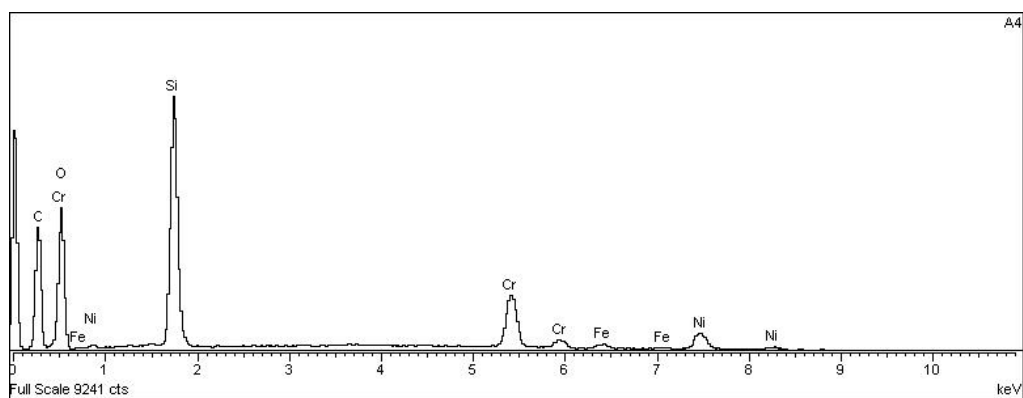
A2



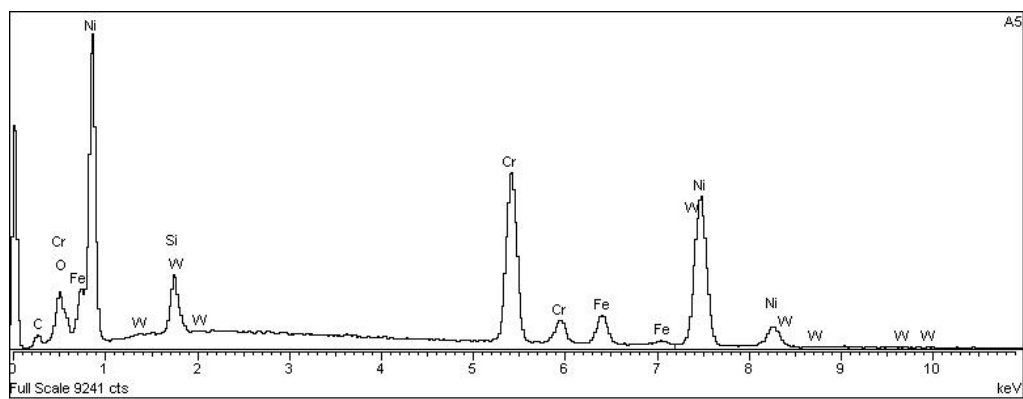
A3



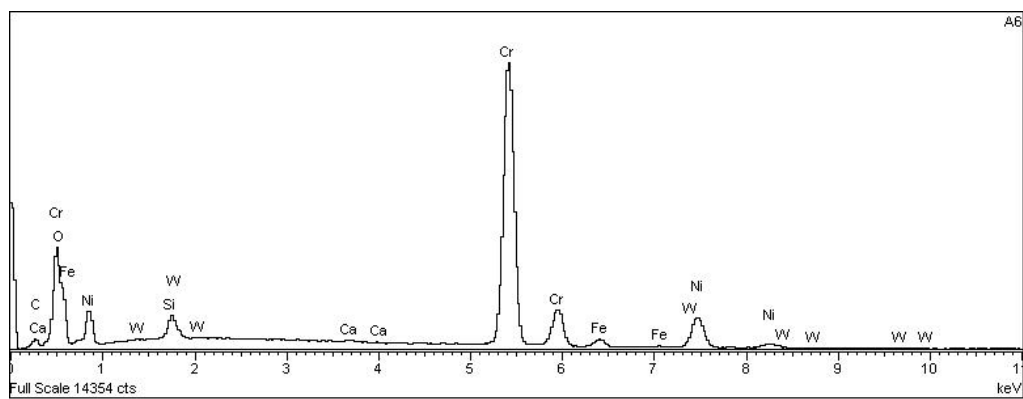
A4



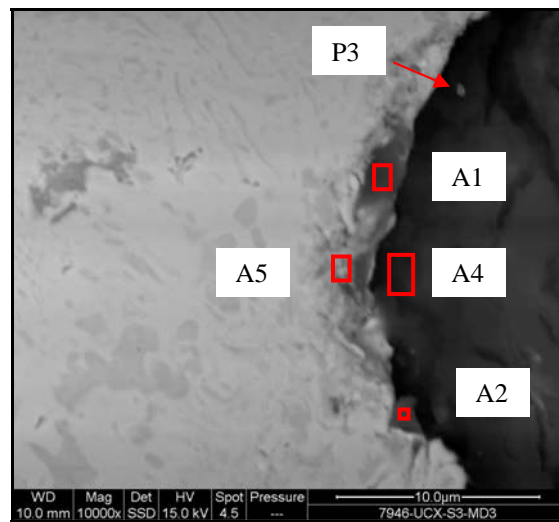
A5



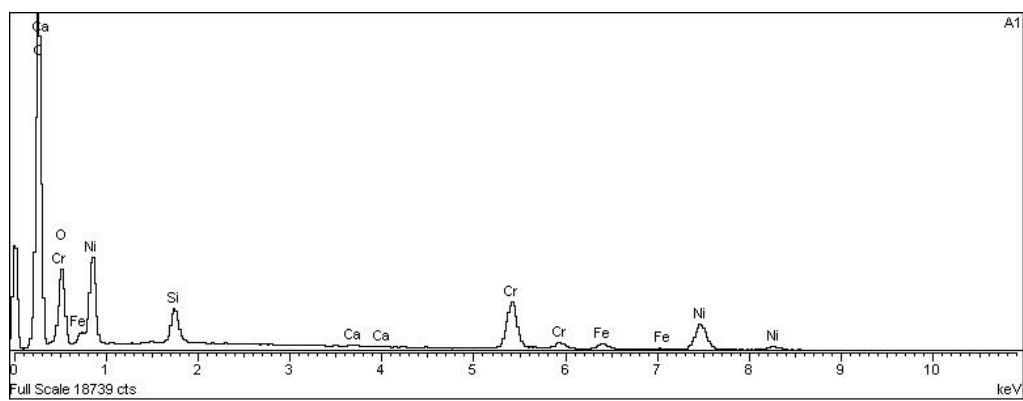
A6



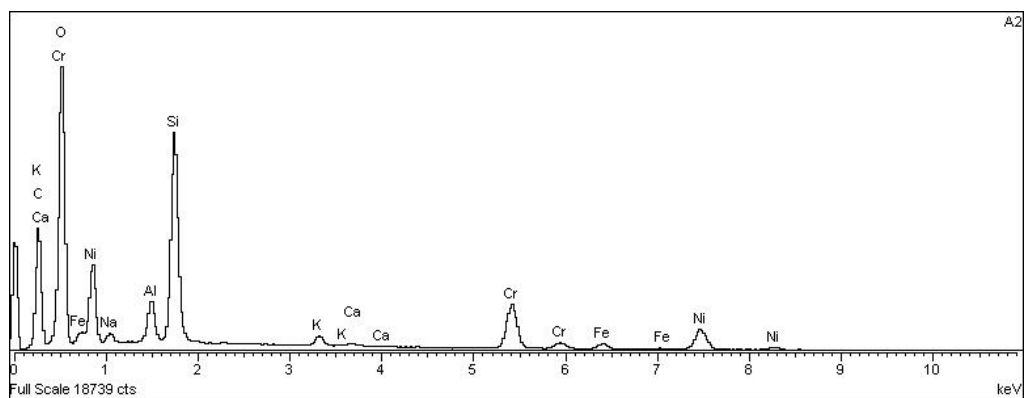
6.5.7 UCX after 100h at 850°C



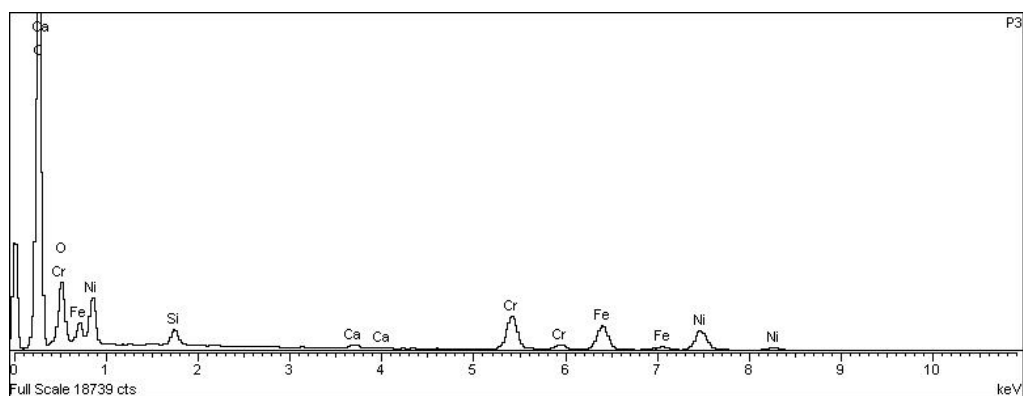
A1



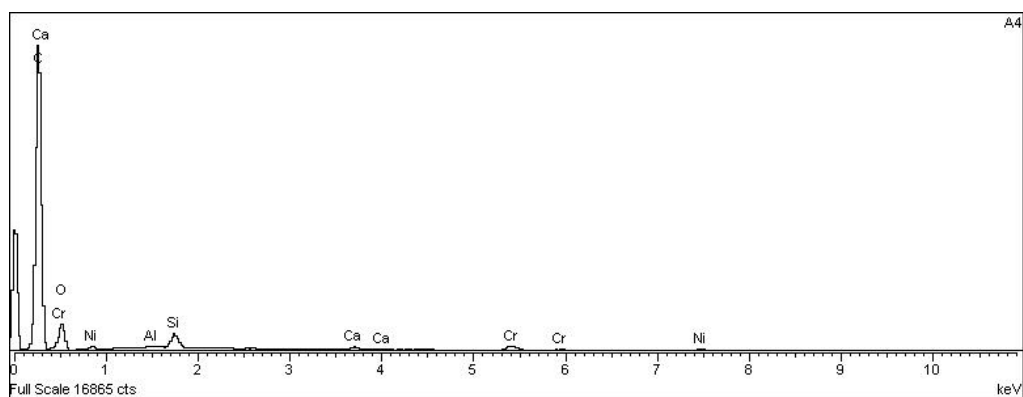
A2



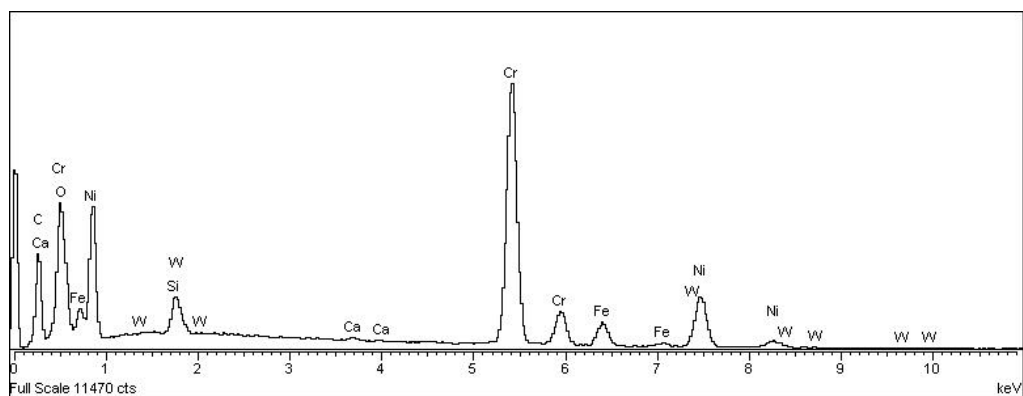
P3



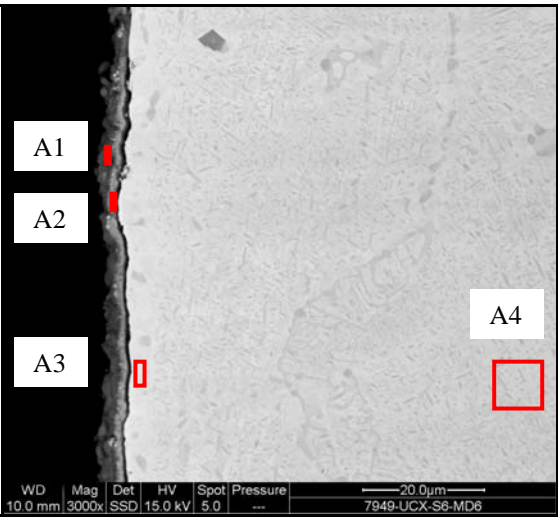
A4



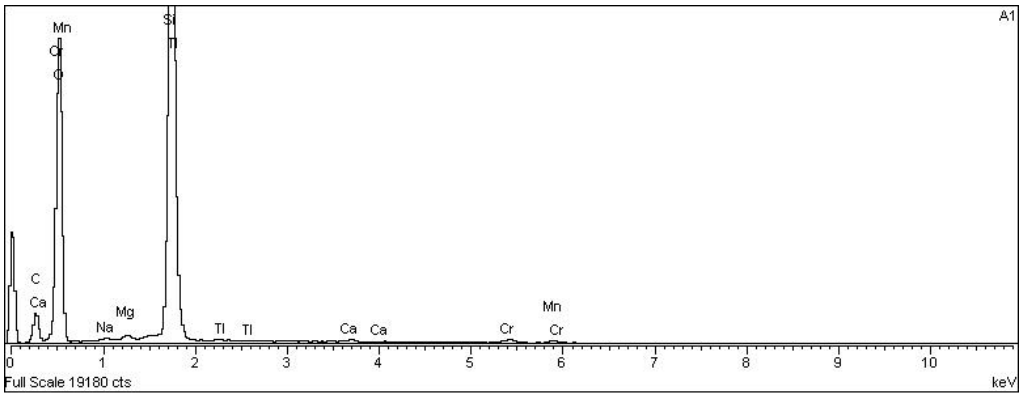
A5



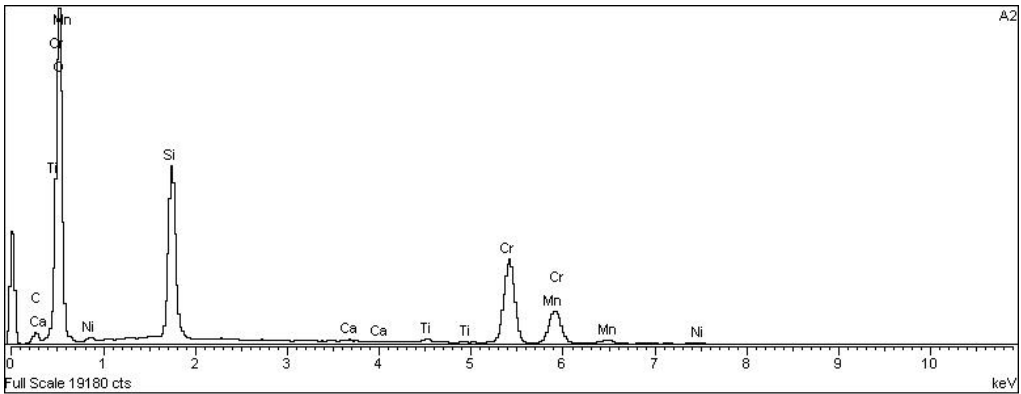
6.5.8 UCX after 500h at 850°C



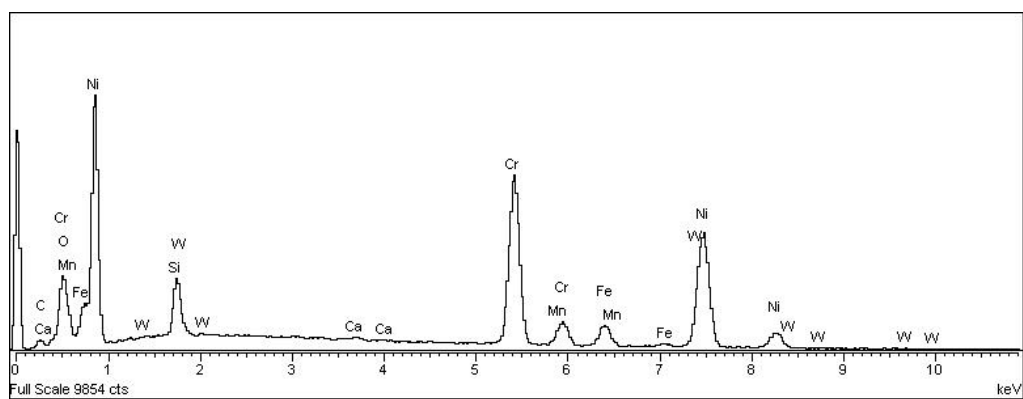
A1



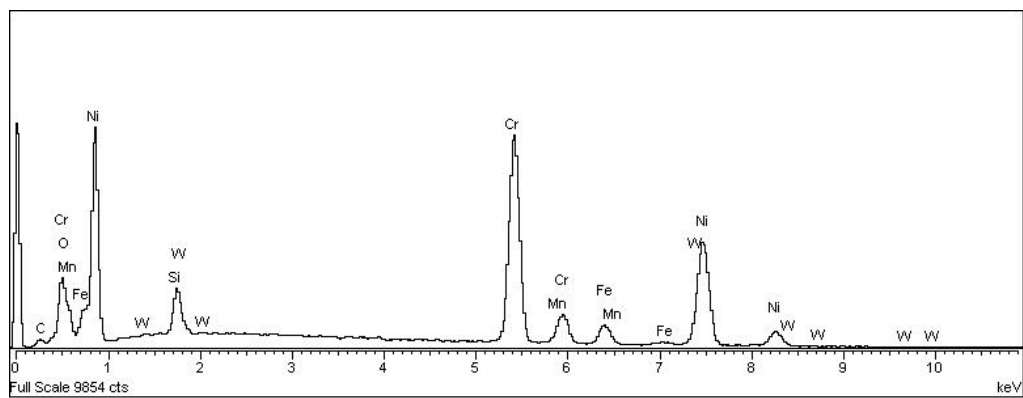
A2



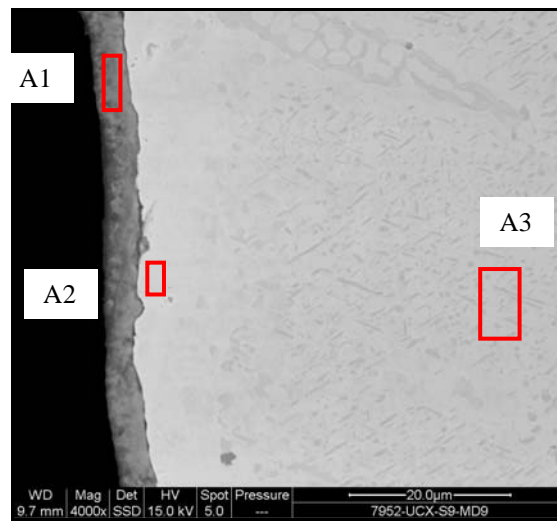
A3



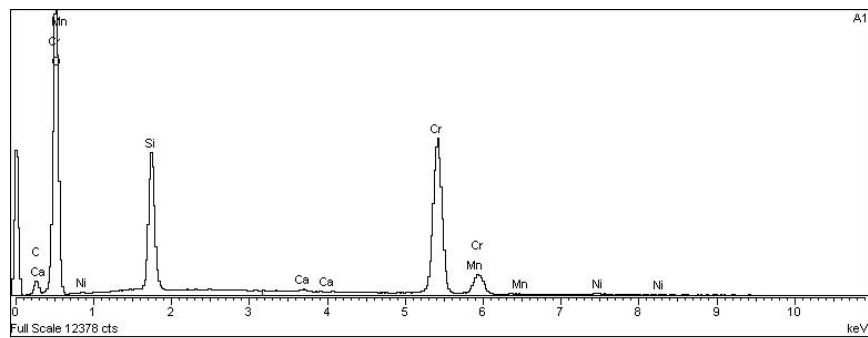
A4



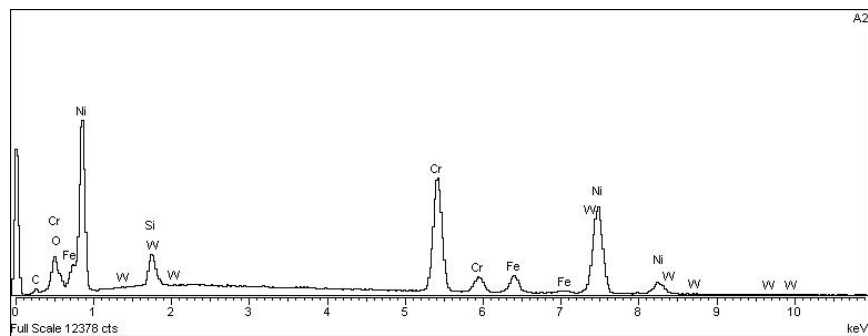
6.5.9 UCX after 1000h at 850°C



A1



A2



A3

